Dental Anatomy of
Anterior Teeth

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1

ฟันหน้า Anterior teeth
12 ซี่



2

OBJECTIVES:

- *To identify the particular anatomical features of anterior teeth: incisors and canines.*
- *To compare maxillary incisors to their mandibular incisor counterparts.*
- *To compare maxillary canine to their mandibular canine counterparts.*
- *To recognize the normal and deviated anatomical forms of anterior teeth.*

3

Anterior teeth

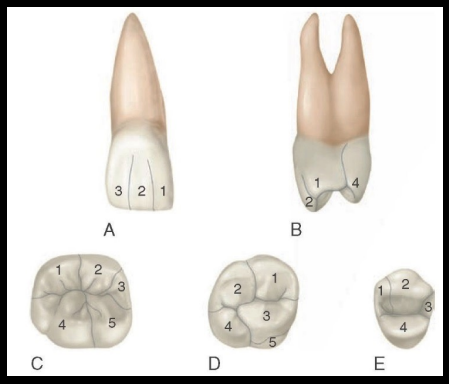
- *Anterior teeth = incisors CLASS (central and lateral TYPE), and canines CLASS*
- *In 1 mouth = 12 anterior teeth*
- *Function:*
  - *Mastication*
  - *Phonetics and speech*
  - *Esthetics and appearance*

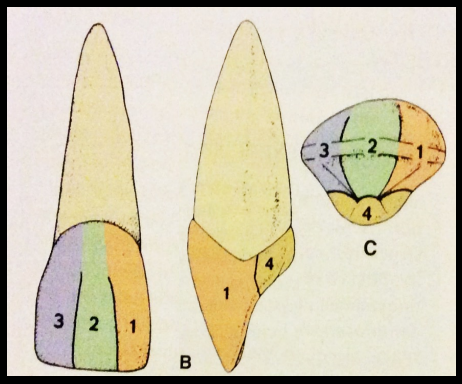


4

Anterior teeth

4 lobes of developments





5

Incisors

- *General form and function:*
  - *Trapezoidal shape / triangular shape*
  - *Inc.2/3 of crown is flattened or compressed*
  - *Mastication: biting or cutting*
- *5 features of incisor's crown (class traits):*
  - *Incisal edge**
  - *Lingual fossa**
  - *Marginal ridge (position and angulation) ****
  - *Mamelons**
  - *Cingulum ***





6

Incisors



Tooth size:

- *Mx incisor > Md Incisor*
- *In maxillary arch : central > lateral*
- *In mandibular arch: lateral > central*
- *Mandibular central incisor is the smallest anterior tooth.*

7

Maxillary incisors

- *Crown: general outline*
  - *Labial view: chisel* (สิ่ว) *hoe* (จอบ)
  - *Proximal view: wedge* (ลิ่ม)
- *3 mamelons >>> sharp incisal edge >>> attrition (wear) >>> incisal surface*



8

Maxillary incisors

- *Palatal surface:*
  - *Fossa*
  - *Marginal ridges*
  - *Cingulum*
  - *Incisal ridge*



9

Maxillary central incisors

ฟันตัดแท้บนซี่กลาง

• *Evidence of calcification*	*3-4 months*
• *Eruption*	*7-8 years*
• *Root completed*	*10 years*
• *Crown length*	*10.5 mm*
• *Root length*	*13.0 mm*

10

Maxillary central incisors

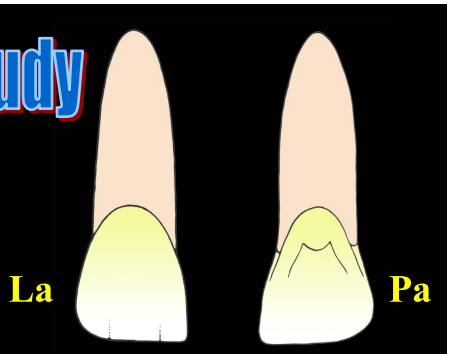


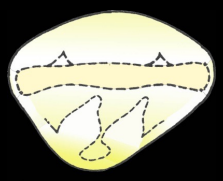
- *Most prominent anterior teeth*
- *Widest M-D among incisors*
- *Labial contour is less rounded than upper lateral & the canines*
- *Mesioincisal angle is sharp, distoincisal angle is round.*

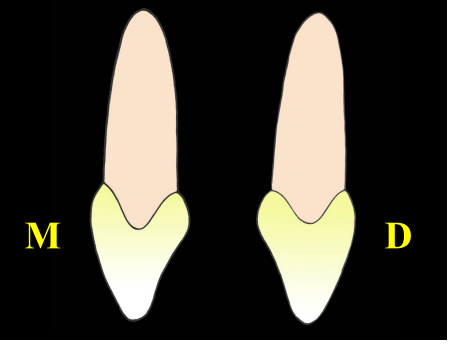
11

Dental Anatomy Study

- 5 views or aspects
  - Labial or buccal
  - Palatal or lingual
  - Mesial
  - Distal
  - Incisal or occlusal



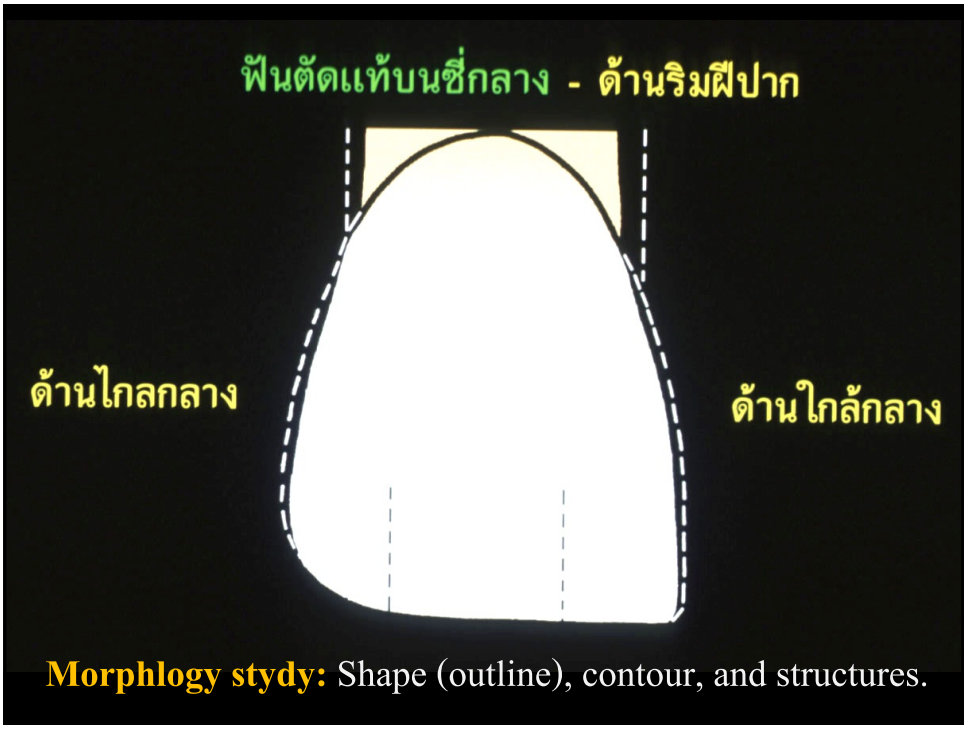




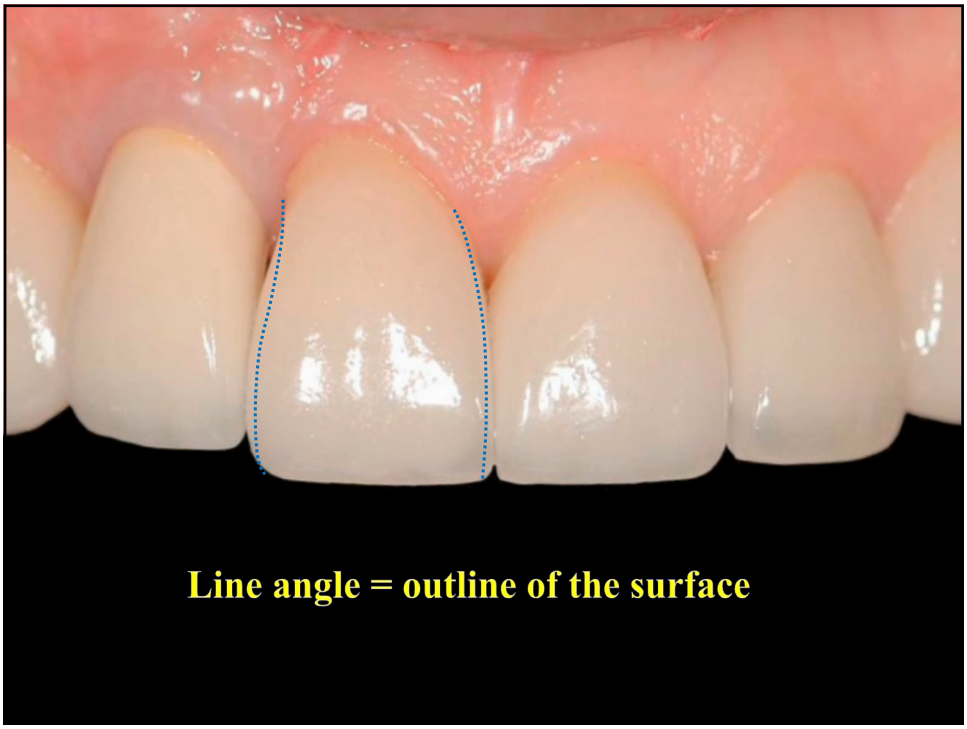
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Dental Anatomy Study
All teeth have 5 aspects
1
Facial
Lingual
Mesial
Distal
Incisal

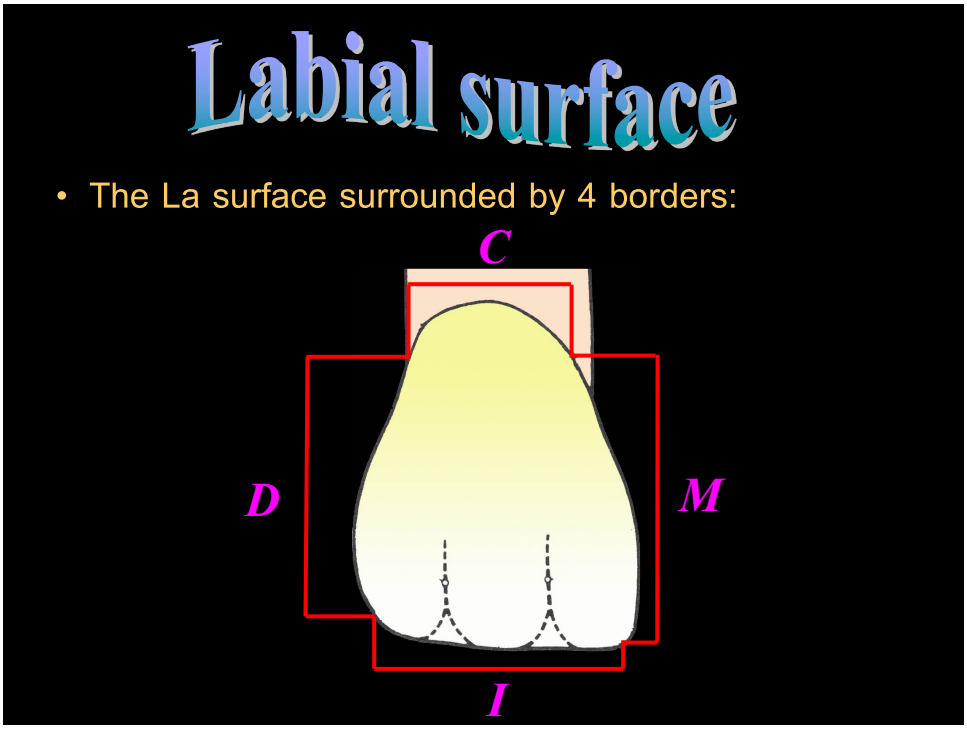
13


ฟันตัดแท้บนซี่กลาง - ด้านริมฝีปาก
ด้านไกลกลาง
ด้านใกล้กลาง
Morphlogy stydy: Shape (outline), contour, and structures.

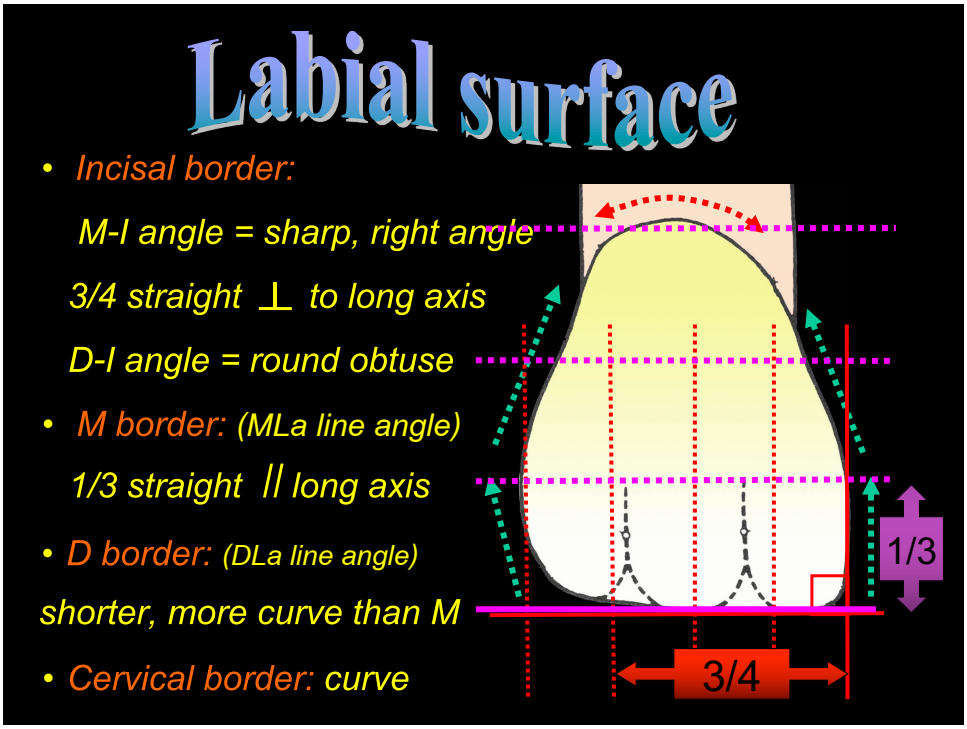
14


Line angle = outline of the surface

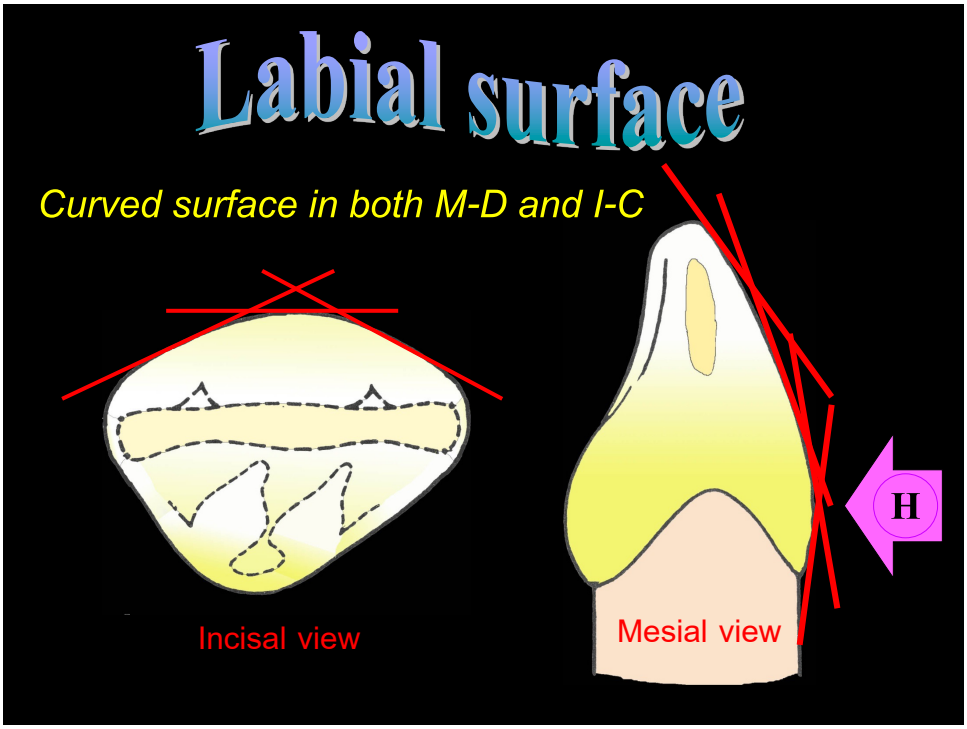
15


Labial surface
• The La surface surrounded by 4 borders:
C
D
M
I

16


Labial surface
• Incisal border:
M-I angle = sharp, right angle
3/4 straight ⊥ to long axis
D-I angle = round obtuse
• M border: (MLa line angle)
1/3 straight // long axis
• D border: (DLa line angle)
shorter, more curve than M
• Cervical border: curve
1/3
3/4

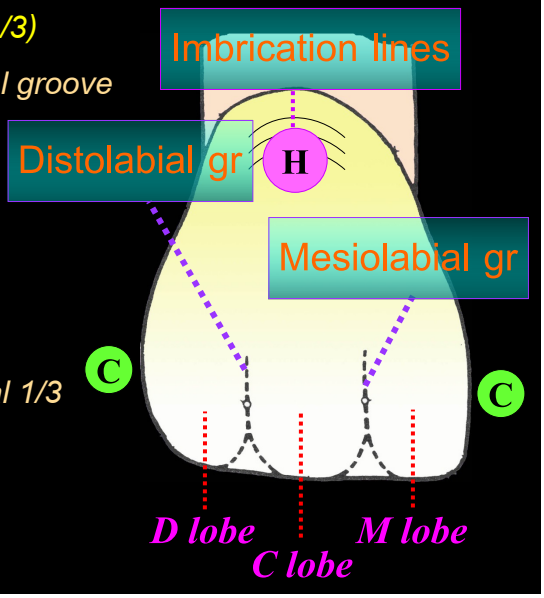
17


Labial surface
Curved surface in both M-D and I-C
H
Incisal view
Mesial view

18

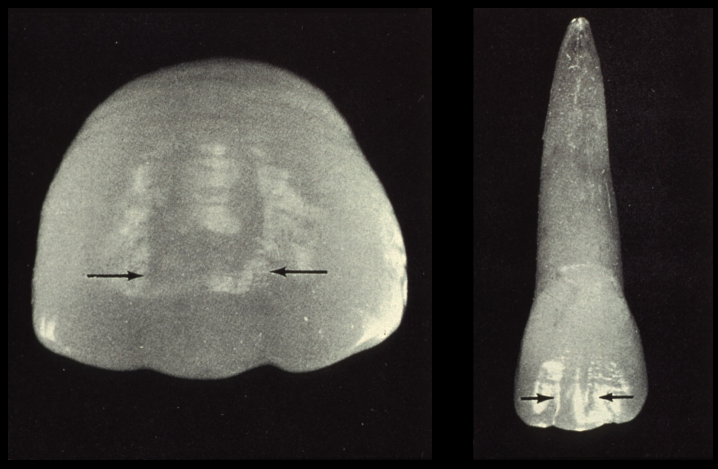
Labial surface

- 2 Dev. grooves : (incisal 1/3)
  Mesiolabial & Distolabial groove
- 3 lobes
  - wideness : C > D > M
  - length : C > M > D
  - convexity : C > M > D
- Height of contour: Cervical 1/3
- Imbrication lines
- Contact : Incisal 1/3



19

Labial surface



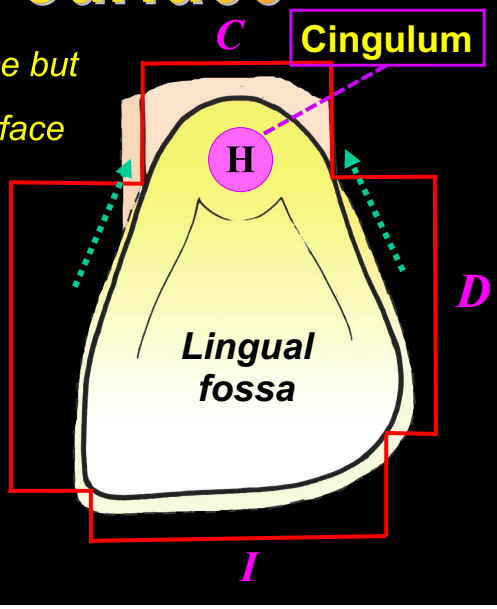
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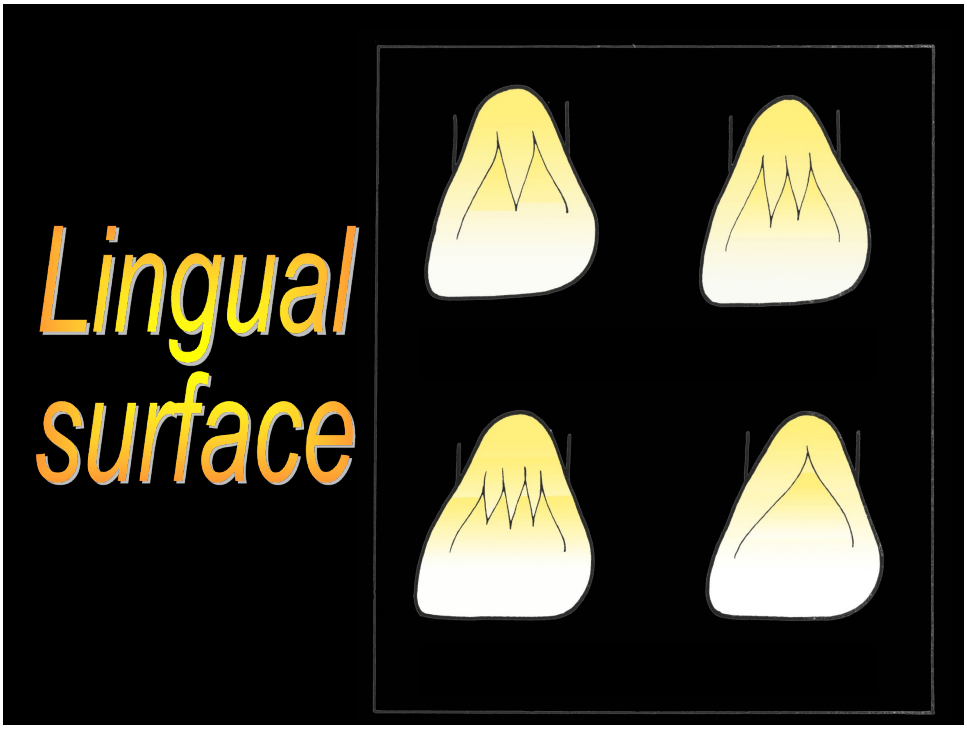
21

Lingual surface

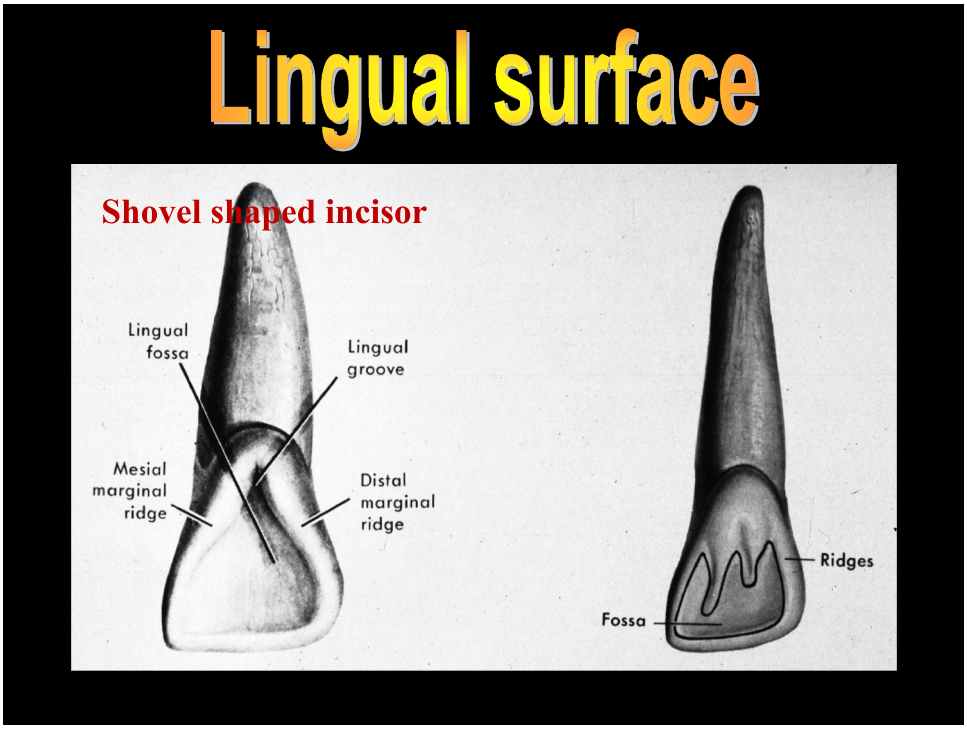
- *Similar to labial surface but smaller than labial surface*
- *M-I angle*
- *Cervical convergence*
- *C border*
- *Lingual fossa*
- *Marginal ridge*
- *Cingulum*



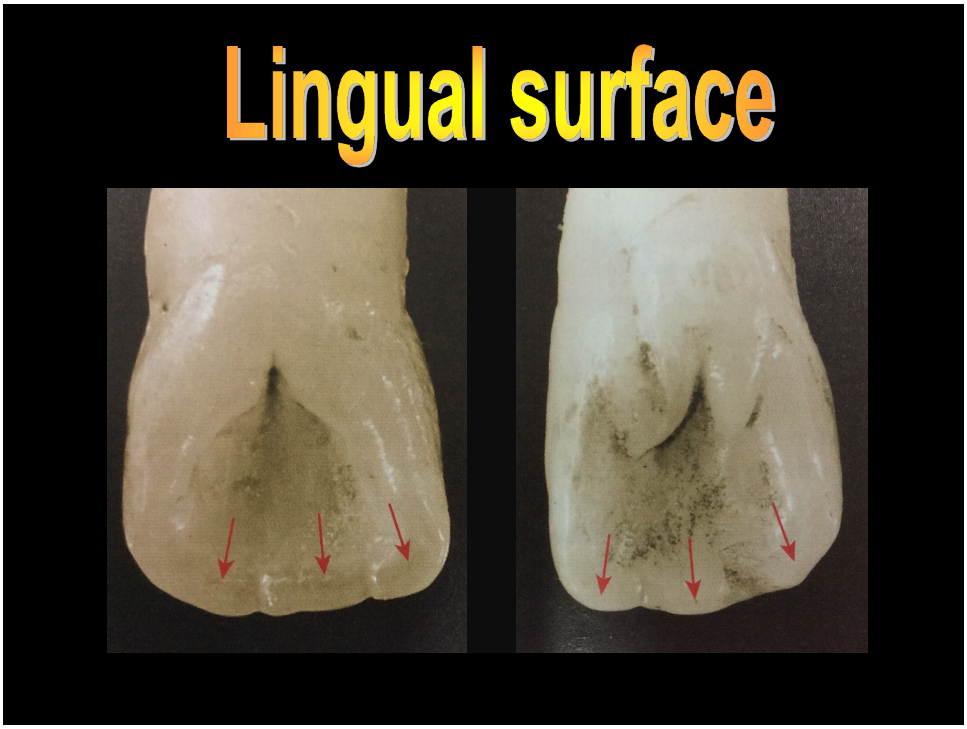
22


Lingual
surface

23


Lingual surface
Shovel shaped incisor
Lingual fossa
Lingual groove
Mesial marginal ridge
Distal marginal ridge
Ridges
Fossa

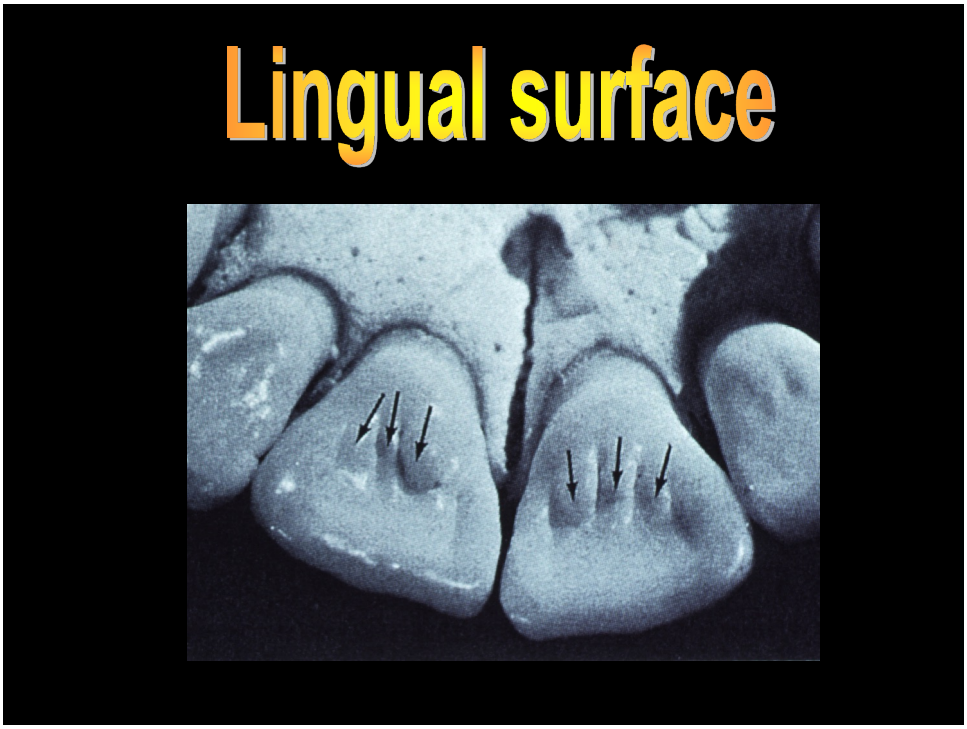
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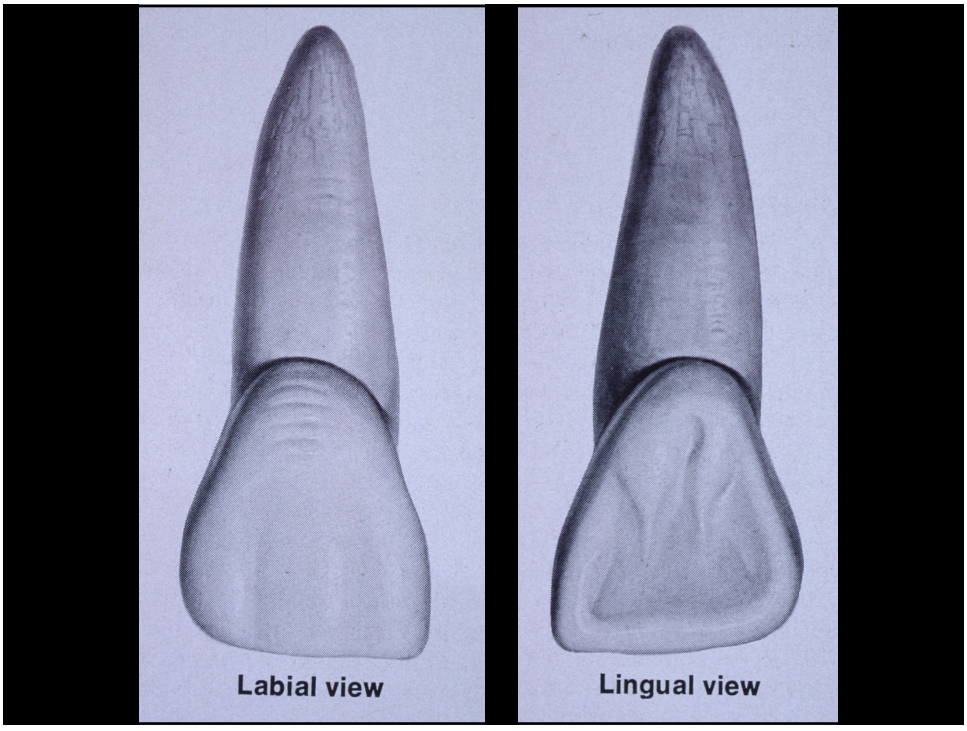
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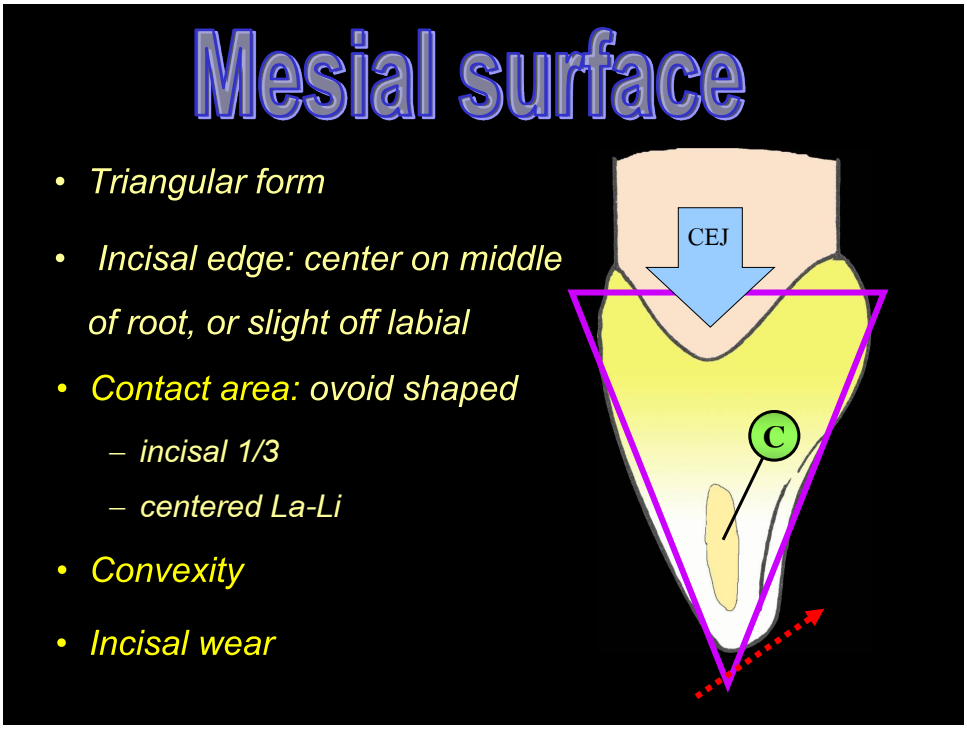
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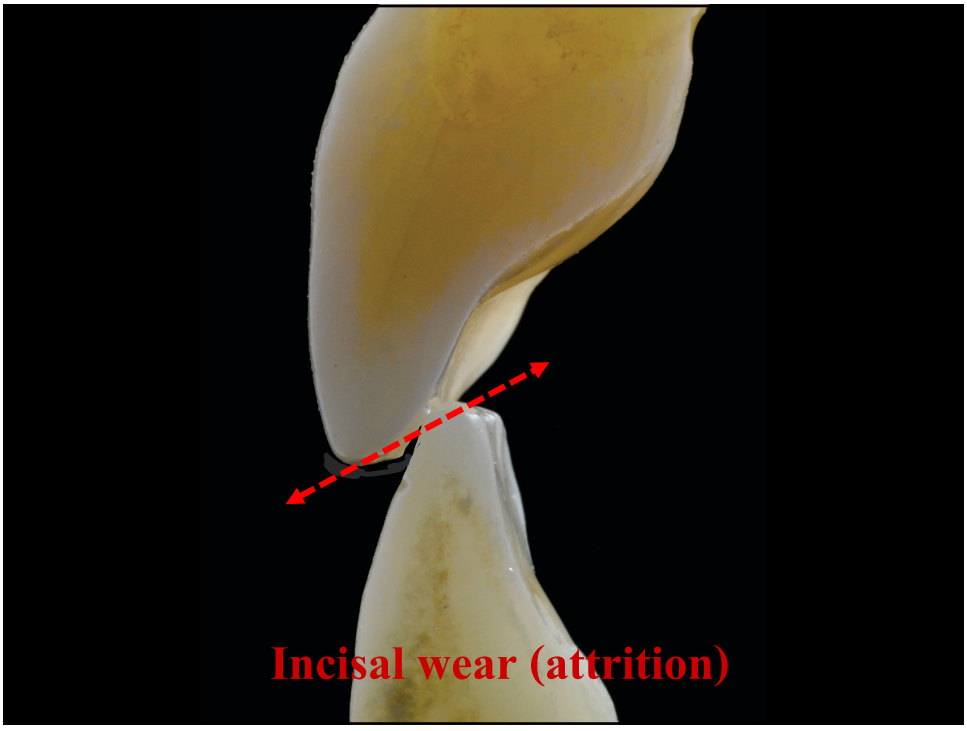
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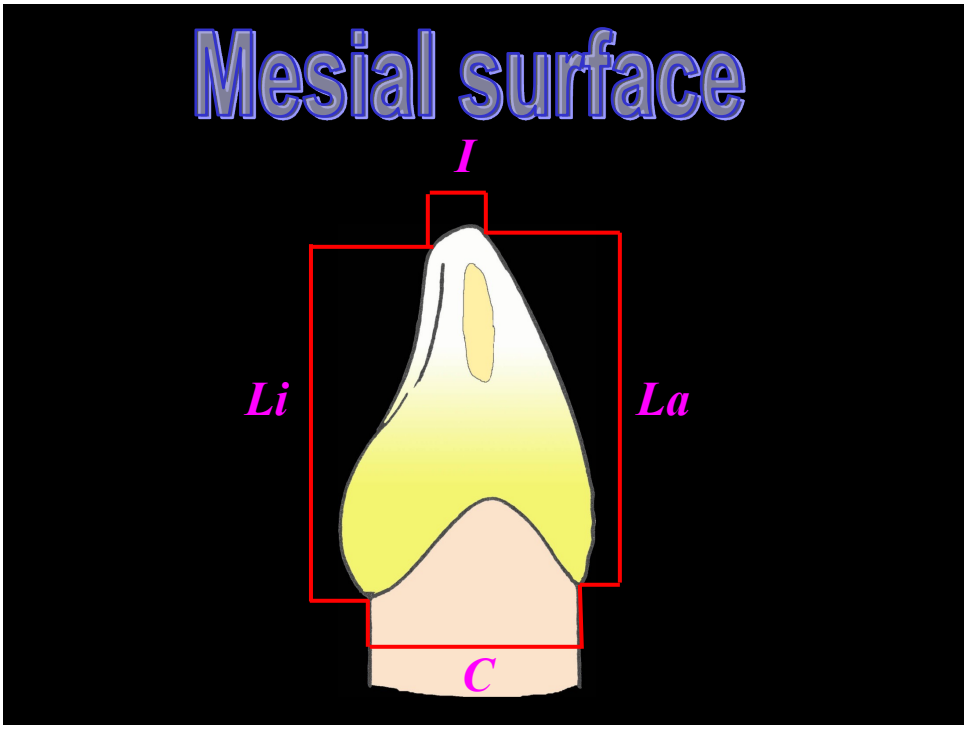
28


Mesial surface
Triangular form
Incisal edge: center on middle of root, or slight off labial
Contact area: ovoid shaped
incisal 1/3
centered La-Li
Convexity
Incisal wear
CEJ
C

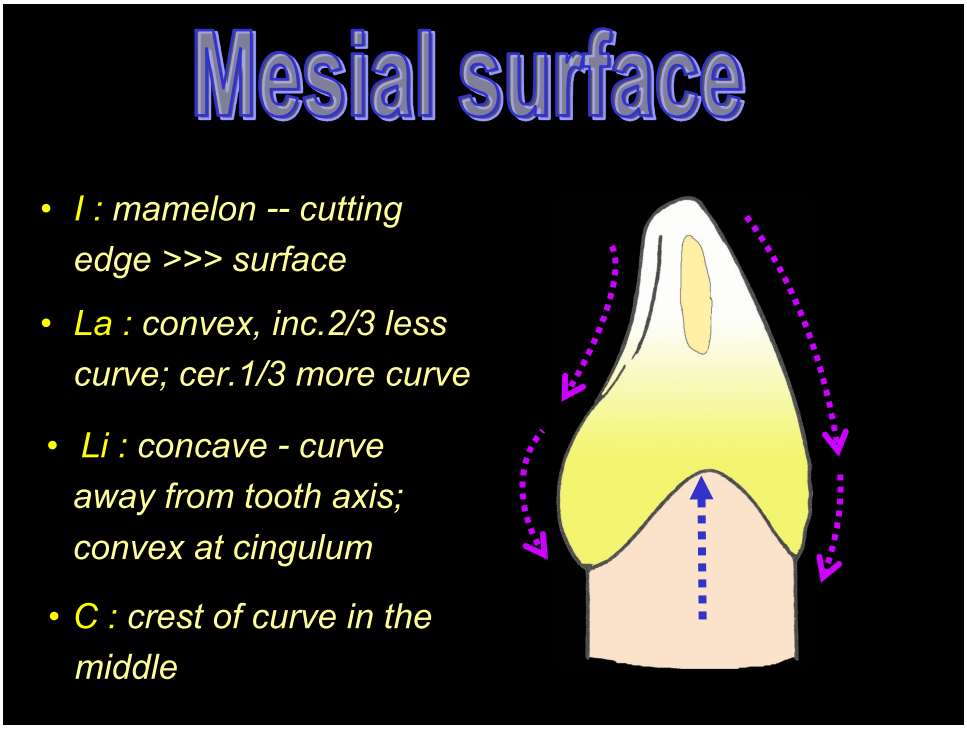
29


Incisal wear (attrition)

30


Mesial surface
I
Li
La
C

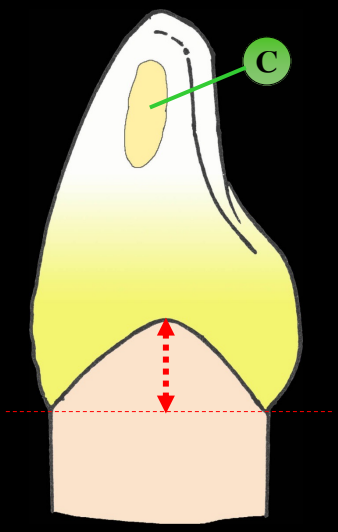
31


Mesial surface
• I : mamelon -- cutting edge >>> surface
• La : convex, inc.2/3 less curve; cer.1/3 more curve
• Li : concave - curve away from tooth axis; convex at cingulum
• C : crest of curve in the middle

33

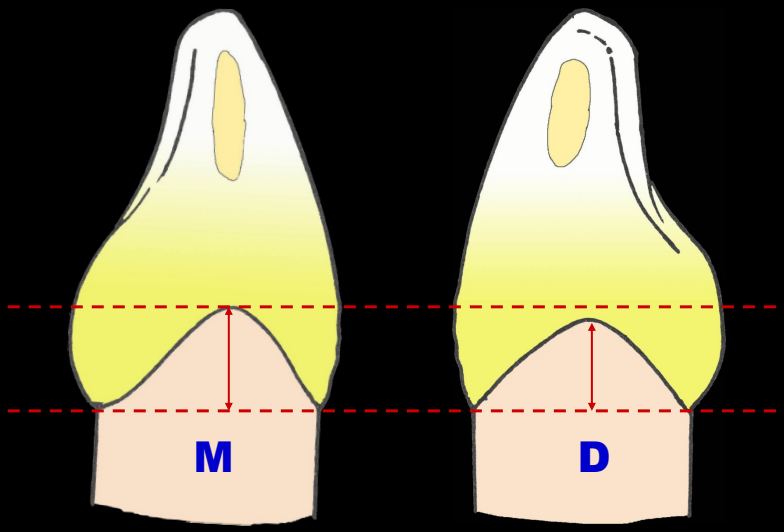
Distal surface

- *Similar to mesial surface but*
  - *smaller , shorter I-C length, more convex*
  - *cervical line is less curved*
- *Contact area: oval shaped*
  - *shorter*
  - *incisal 1/3 but more cervical*

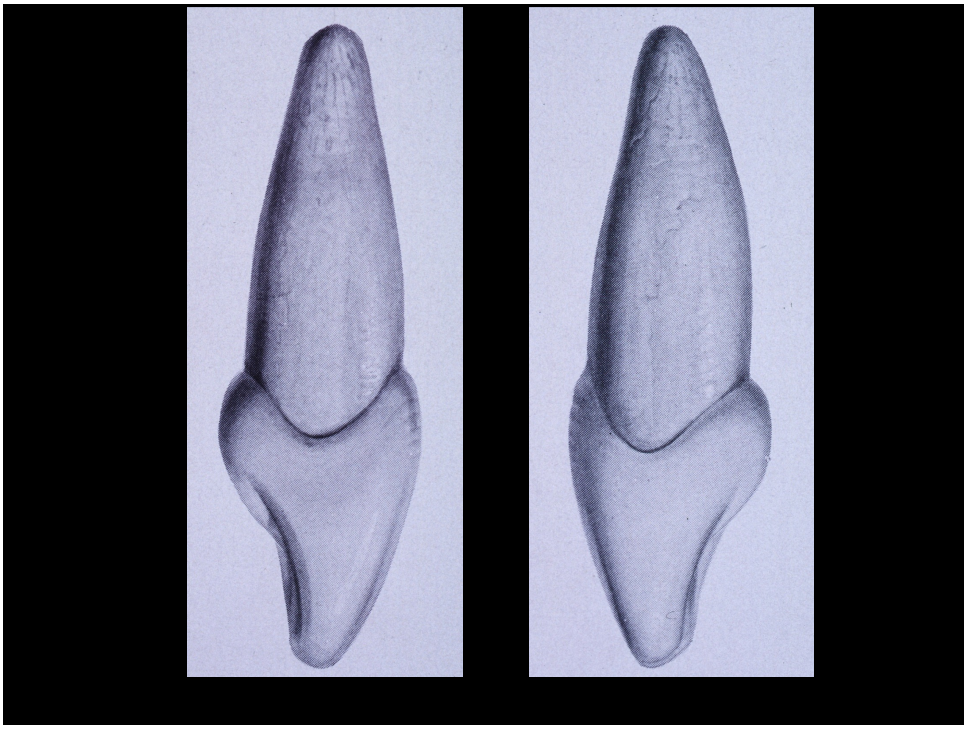


34

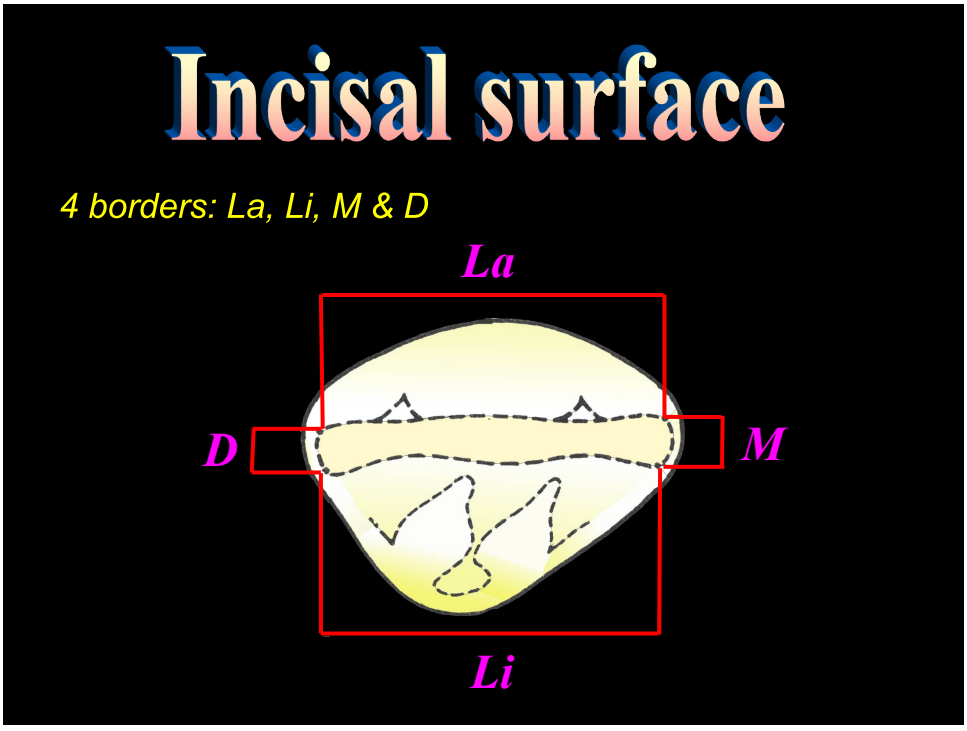
Cervical curvature is greater on M surface than D surface, and any other teeth in the mouth.



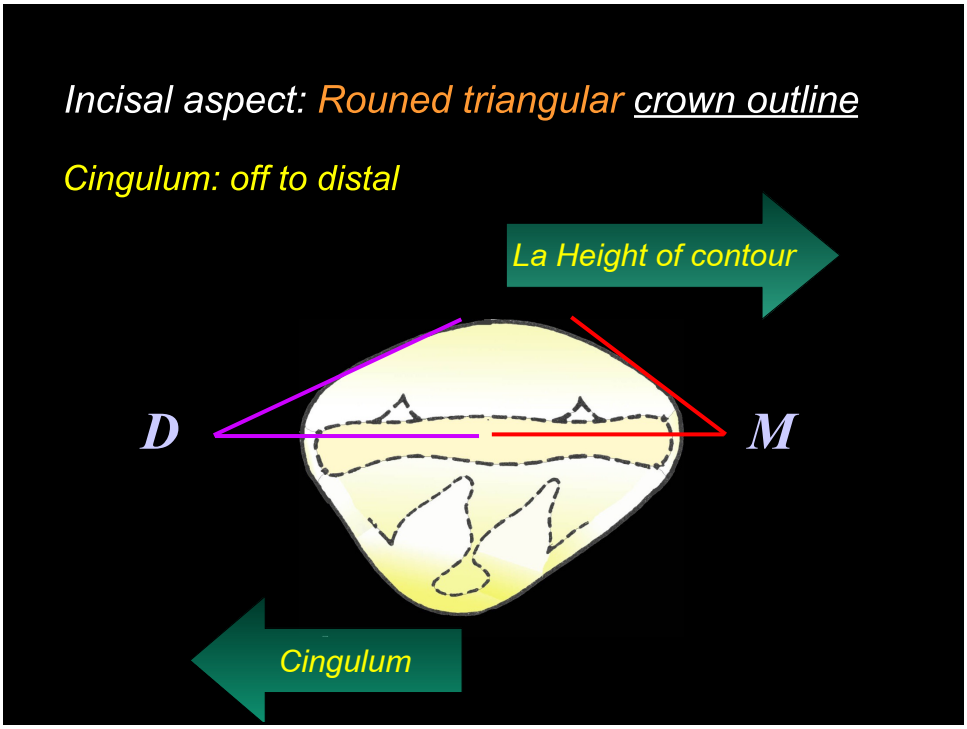
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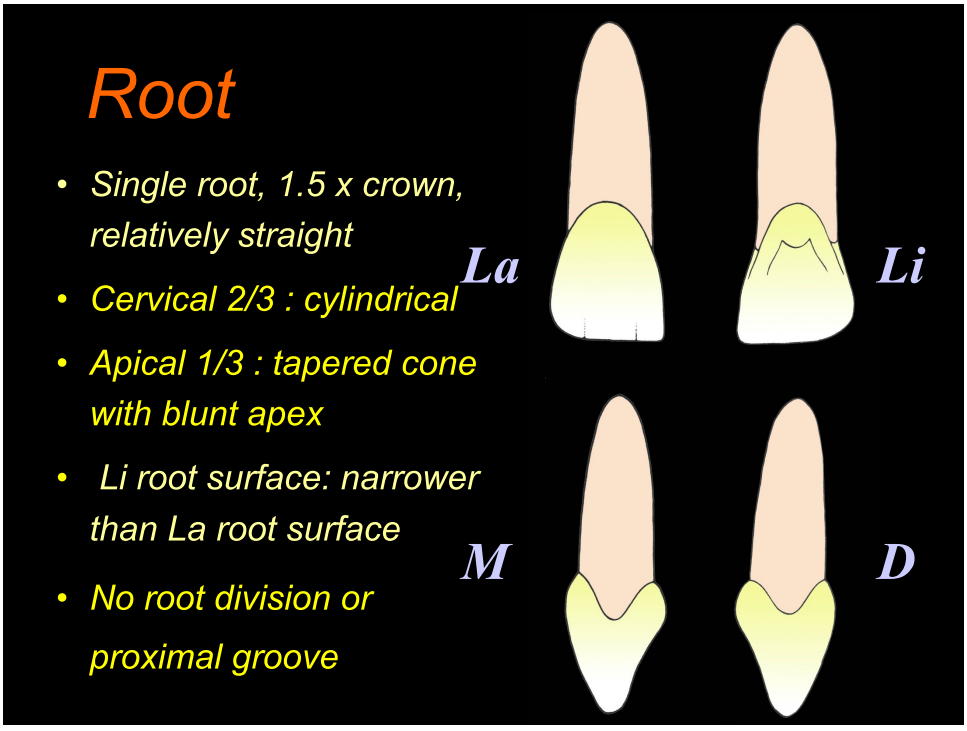
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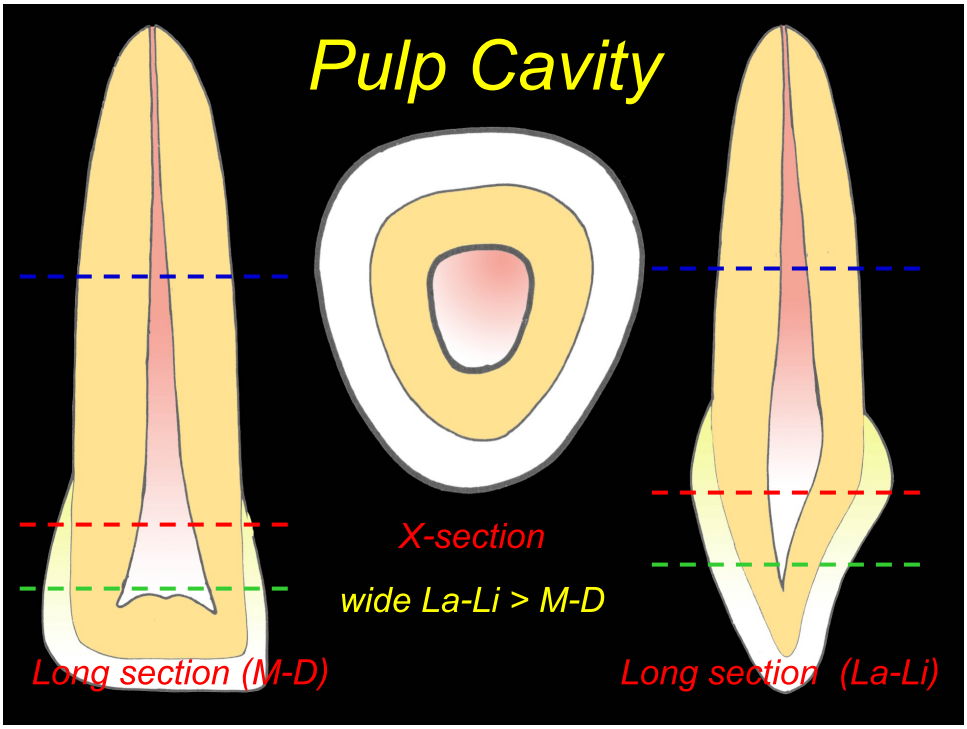
37


Incisal aspect: Rouned triangular crown outline
Cingulum: off to distal
La Height of contour
D
M
Cingulum

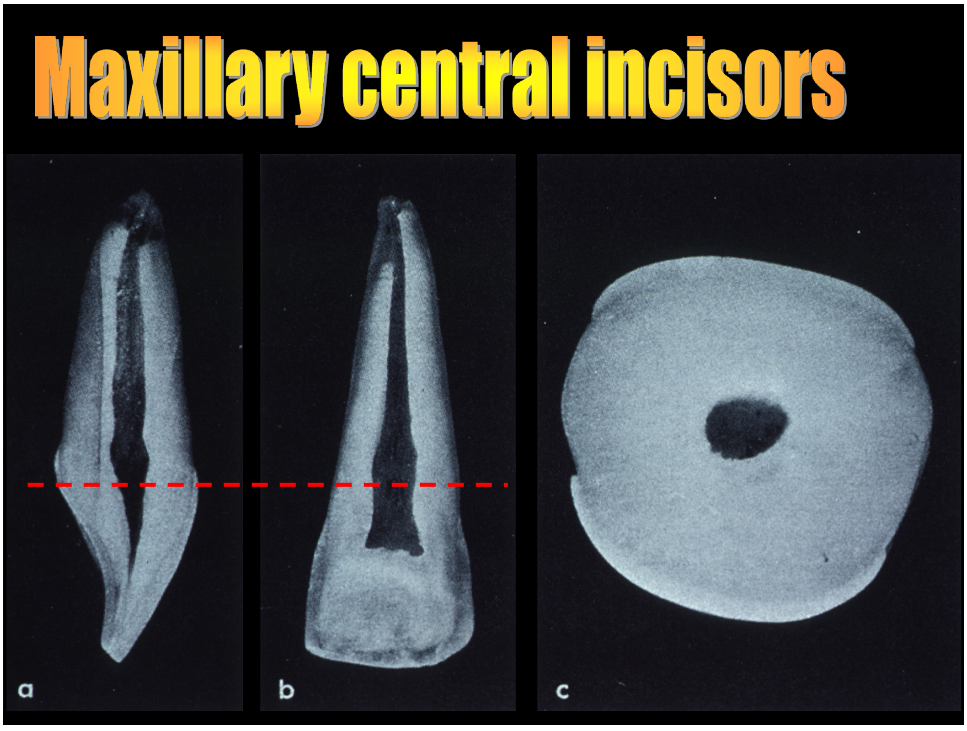
38


Root
Single root, 1.5 x crown, relatively straight
Cervical 2/3 : cylindrical
Apical 1/3 : tapered cone with blunt apex
Li root surface: narrower than La root surface
No root division or proximal groove
La
Li
M
D

39

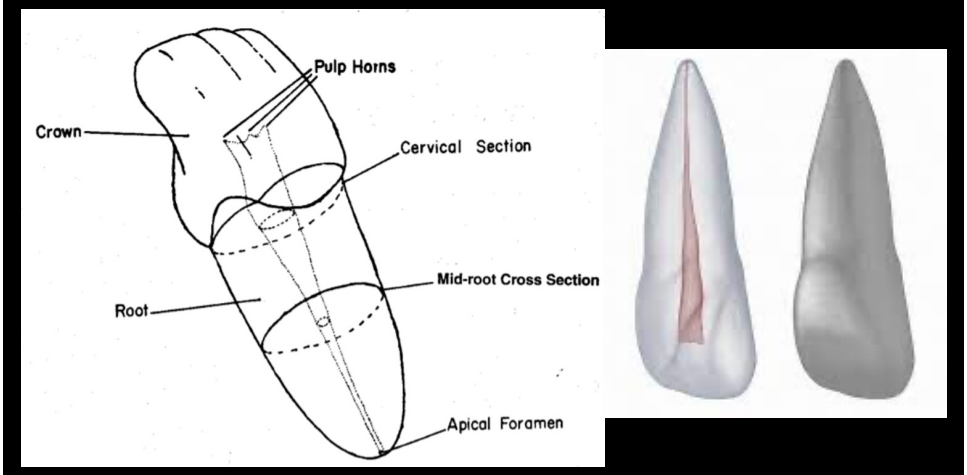

Pulp Cavity
X-section
wide La-Li > M-D
Long section (M-D)
Long section (La-Li)

40


Maxillary central incisors
a
b
c

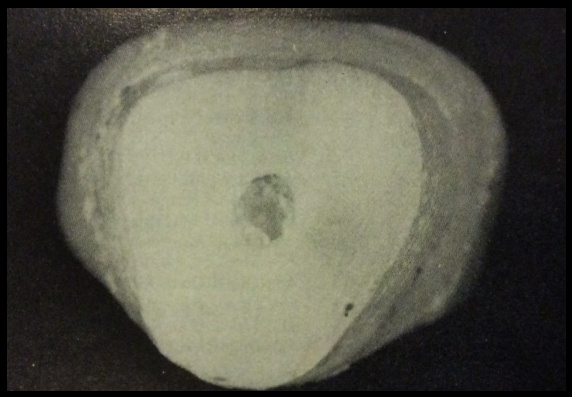
41

Maxillary central incisors



42

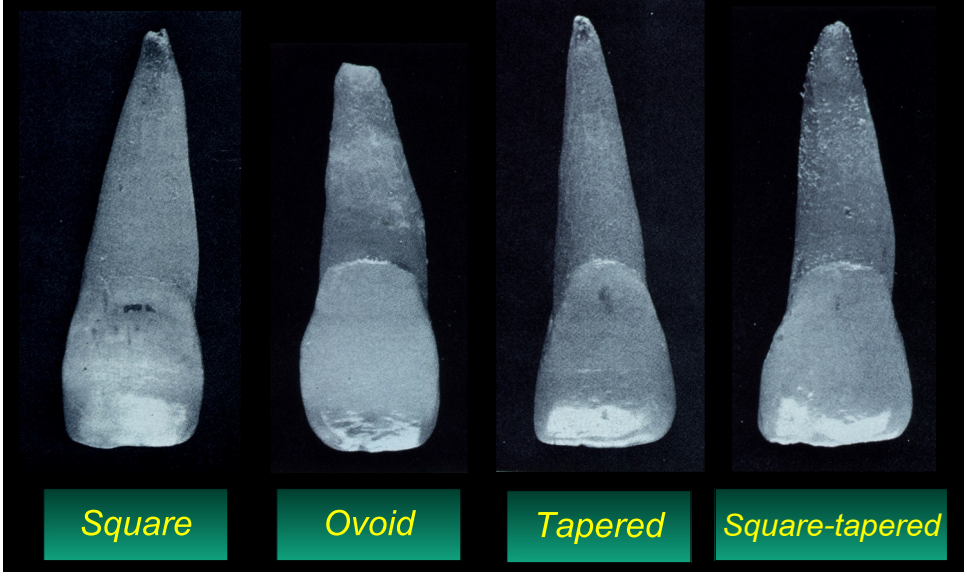
Maxillary central incisors



Cross section Cer 1/3 of root

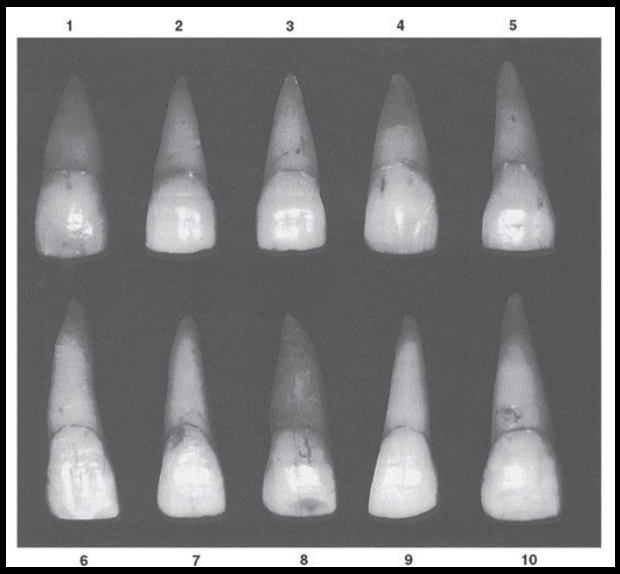
43

Crown outline variation:

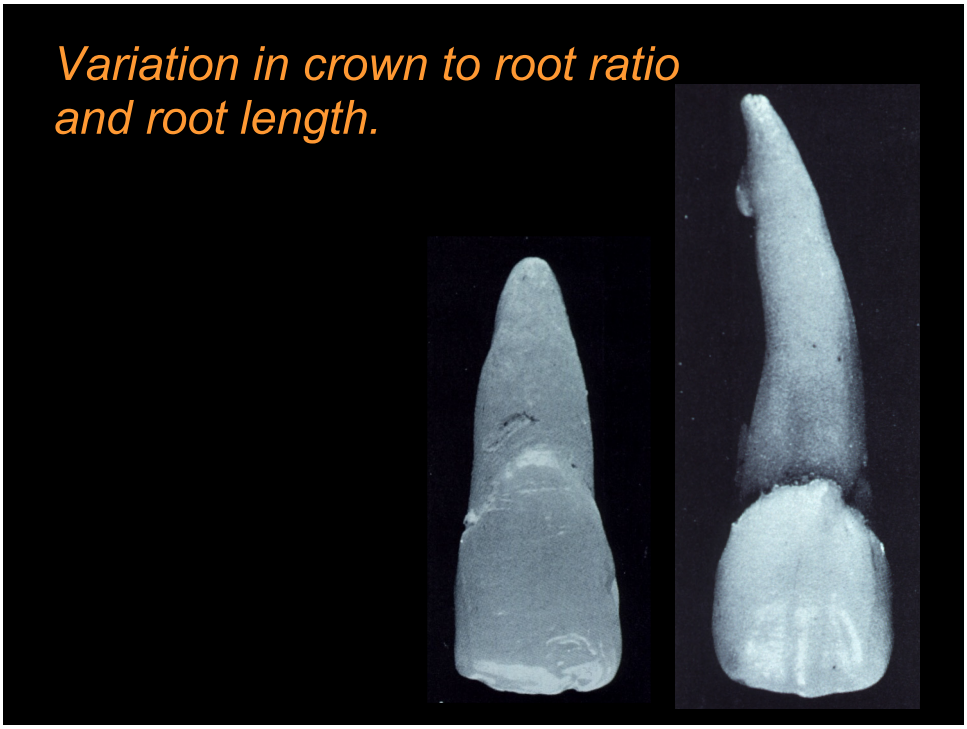


44

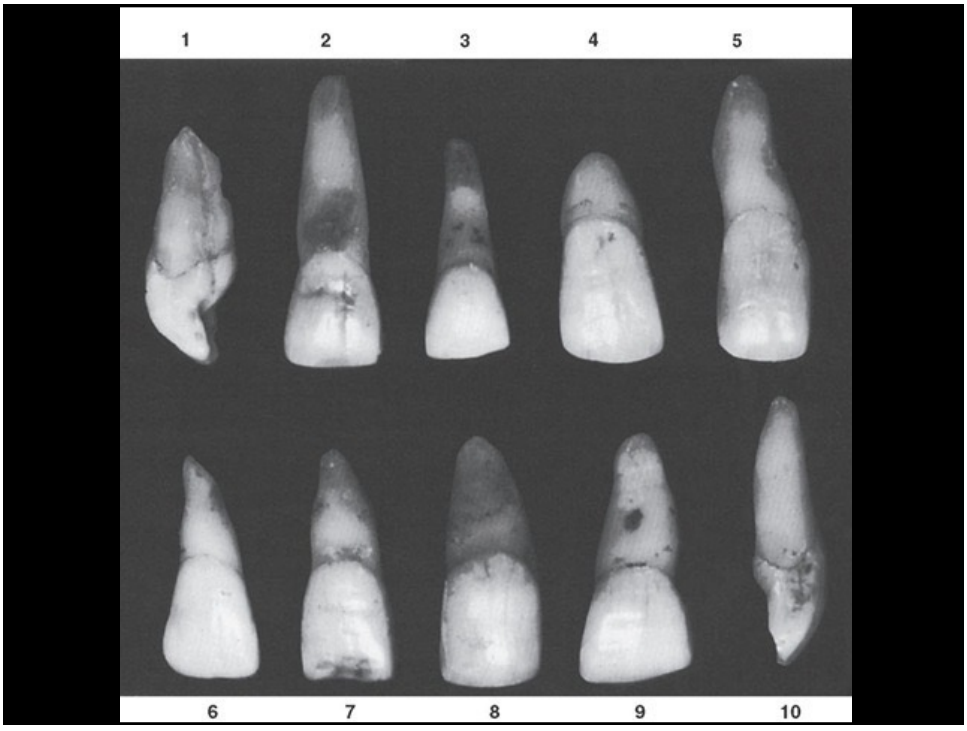
Crown outline variation:



45


Variation in crown to root ratio
and root length.

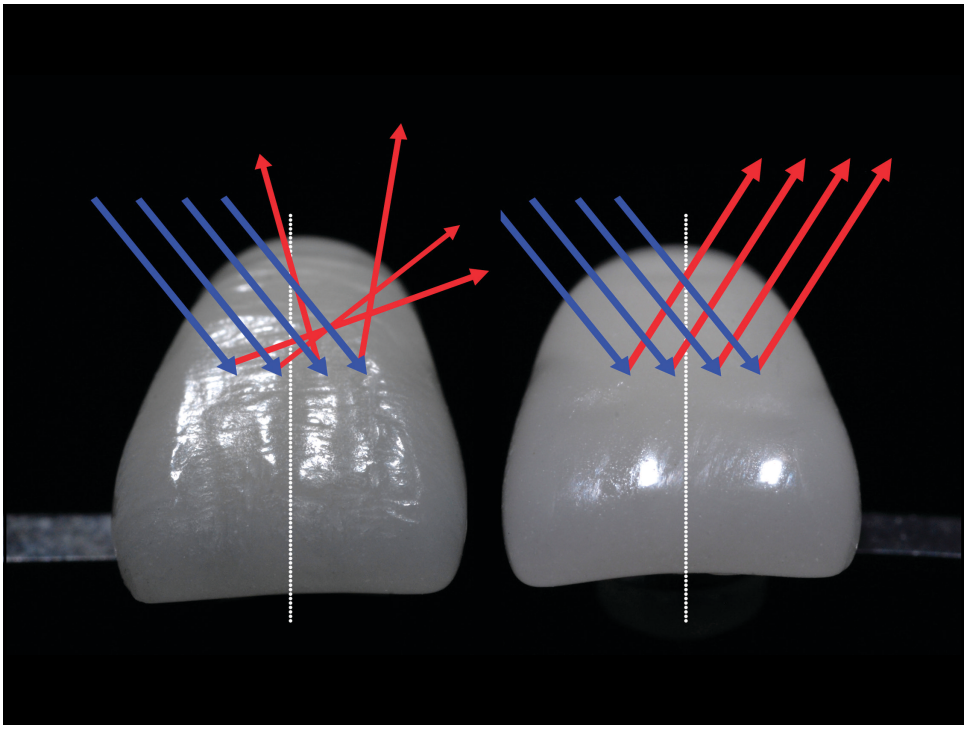
46


1
2
3
4
5
6
7
8
9
10

47



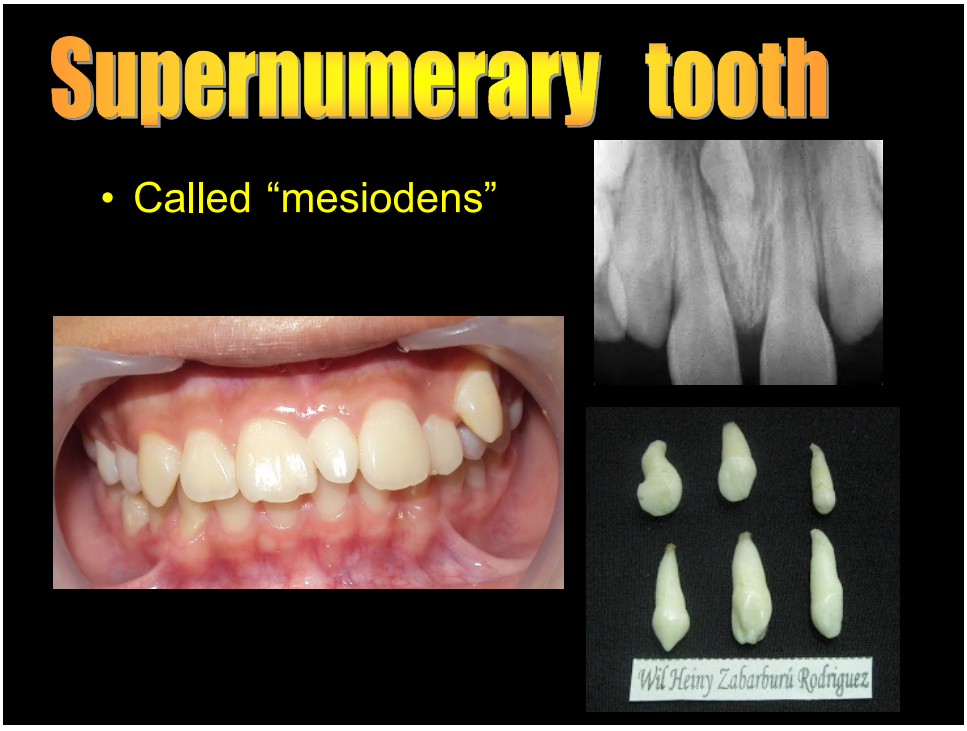
48



49


Juniordentist.com

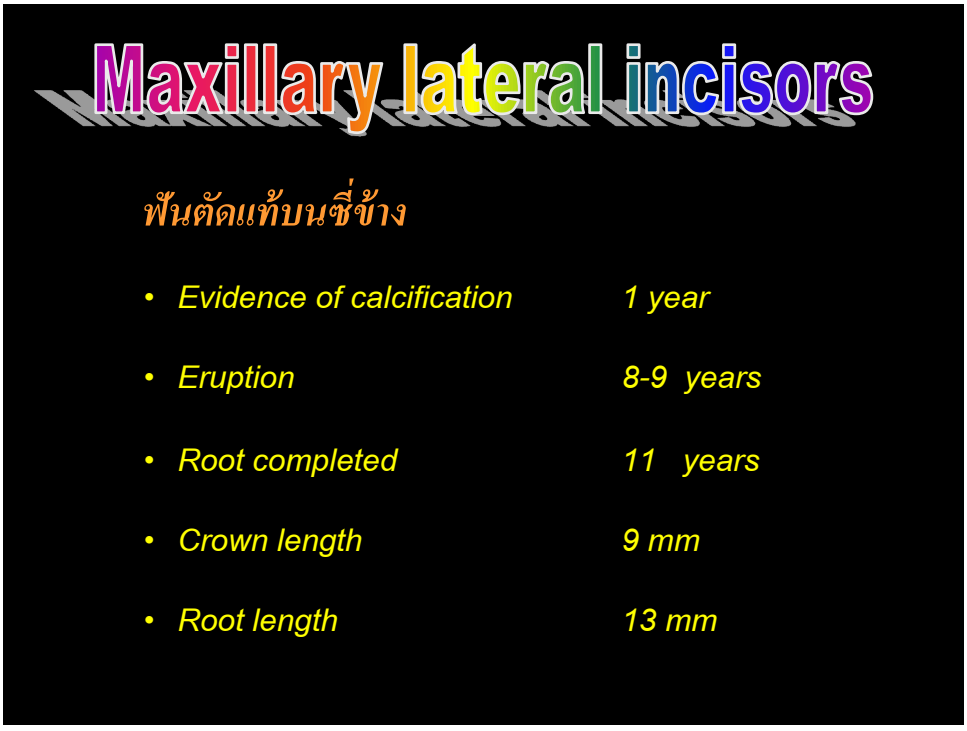
50


Supernumerary tooth
• Called “mesiodens”
Wil Heiny Zabarburú Rodriguez

53


Maxillary lateral incisors
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ทบ.(เกียรตินิยมอันดับ 1 มหิดล)
MDSc. (Orthodontics, Australia)
อท.(ทันตกรรมจัดฟัน)
อท.(ทันตกรรมบดเคี้ยวและความเจ็บปวดช่องปากใบหน้า)
ภาควิชาวิทยาระบบบดเคี้ยว
คณะทันตแพทยศาสตร์ มหาวิทยาลัยมหิดล

54


Maxillary lateral incisors
ฟันตัดแท้บนซี่ข้าง
Evidence of calcification 1 year
Eruption 8-9 years
Root completed 11 years
Crown length 9 mm
Root length 13 mm

55

Maxillary lateral incisors



- *The 2nd from the midline.*
- *The shape is similar to central incisor but smaller (shorter & narrower), slimmer, and more tapered, more convex & concave*

56

Maxillary lateral incisors



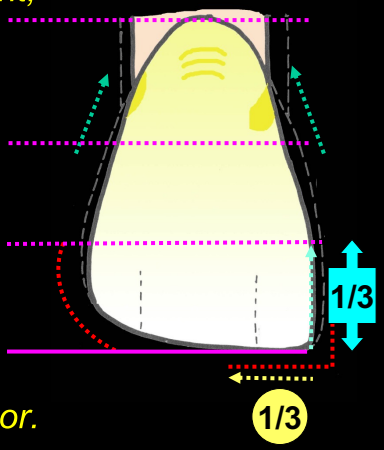


- *If mesial and distal lobes are not developed, named "peg-shaped" incisor.*
- *can be congenitally missing*
- *perhaps most variable tooth except 3rd molar*

57

Labial surface

- *Incisal border : M-I angle: right,*
  1/3 straight ⊥ long axis,
  round and obtuse D-I angle
- *M border:*
  1/3 straight ∥ to long axis
- *D border: curve & shorter > M*
- *C border: curve > central incisor.*

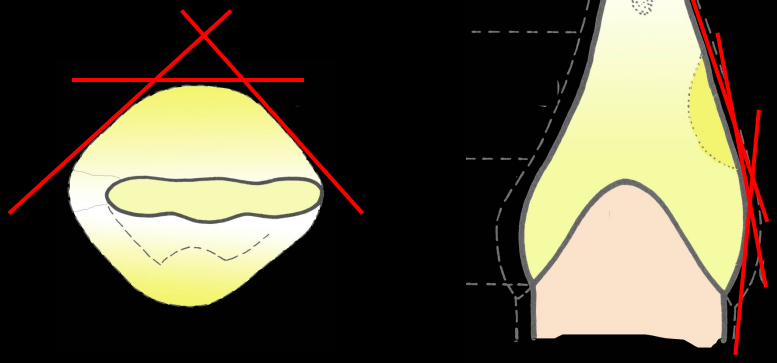


59

Labial surface

Curve in both M-D & I-C

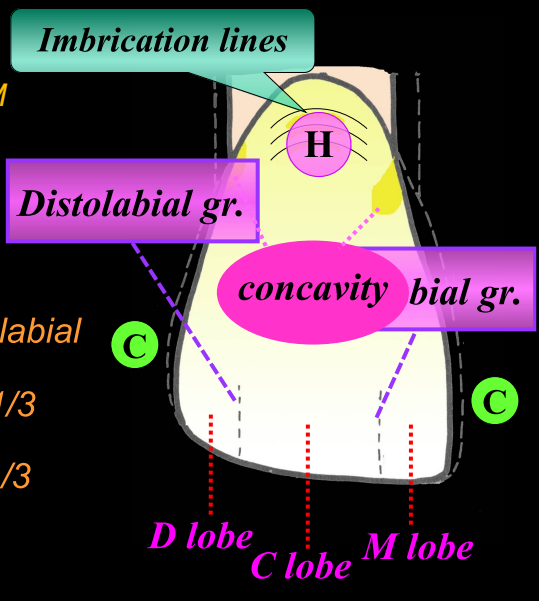
More convexity than central incisors



61

Labial surface

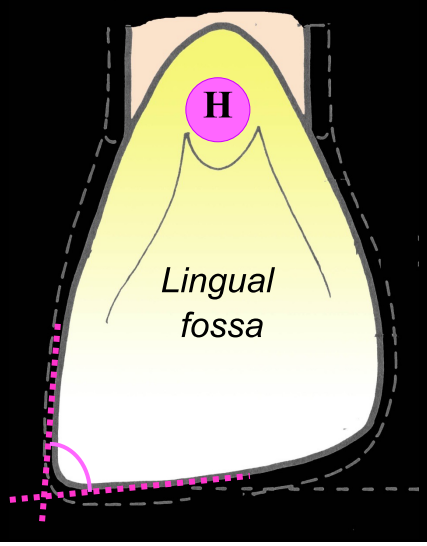
- 3 lobes
  - wideness : C > D = M
  - length : C > M > D
  - most convex : C
- 2 groove (incisal 1/3)
  - mesiolabial & distolabial
- Height of contour : C 1/3
- Contact : M = incisal 1/3
  D = inc 1/3 to mid 1/3



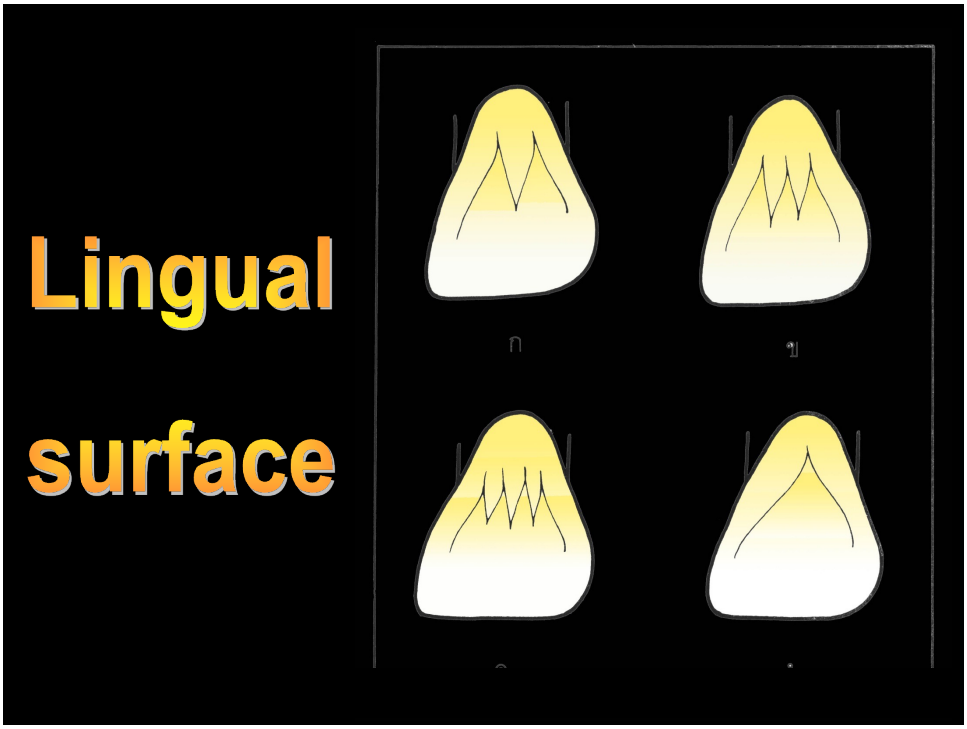
62

Lingual surface

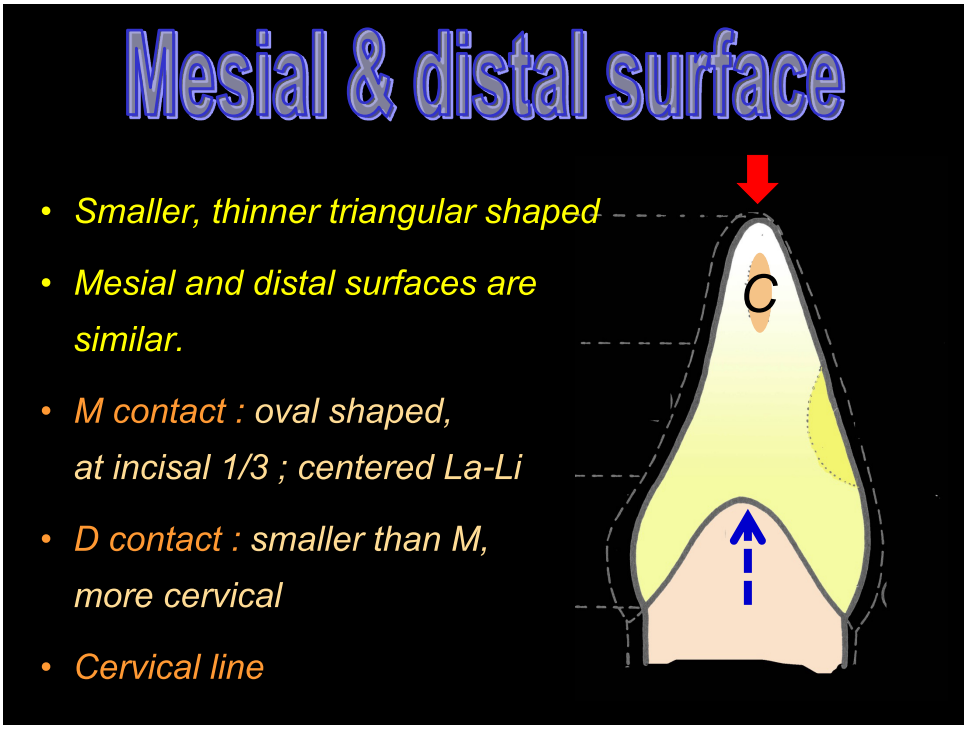
- Similar to labial surface but smaller, narrower
- M-I angle = slightly more acute angle
- Marginal ridges & cingulum are more prominent
- Li fossa is deeper than central incisor



63


Lingual
surface

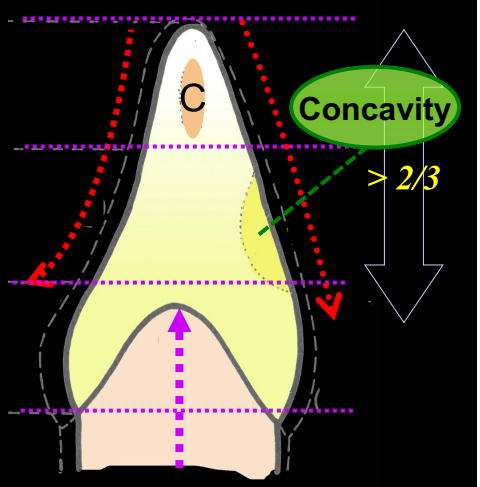
64


Mesial & distal surface
Smaller, thinner triangular shaped
Mesial and distal surfaces are similar.
M contact : oval shaped, at incisal 1/3 ; centered La-Li
D contact : smaller than M, more cervical
Cervical line
C

65

Mesial surface

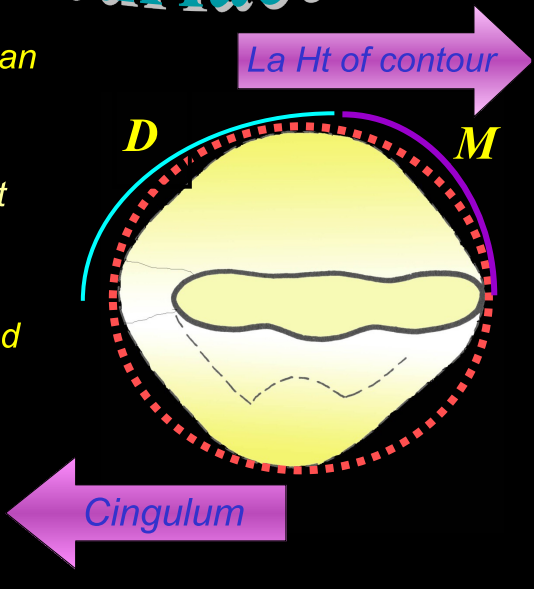
- *Incisal : @ middle (center), mamelon & cutting edge*
- *La : Inc.2/3 less curved; more convex at cer.1/3*
- *Li : slight S curve, concave & convex*
- *C : crest in the middle*



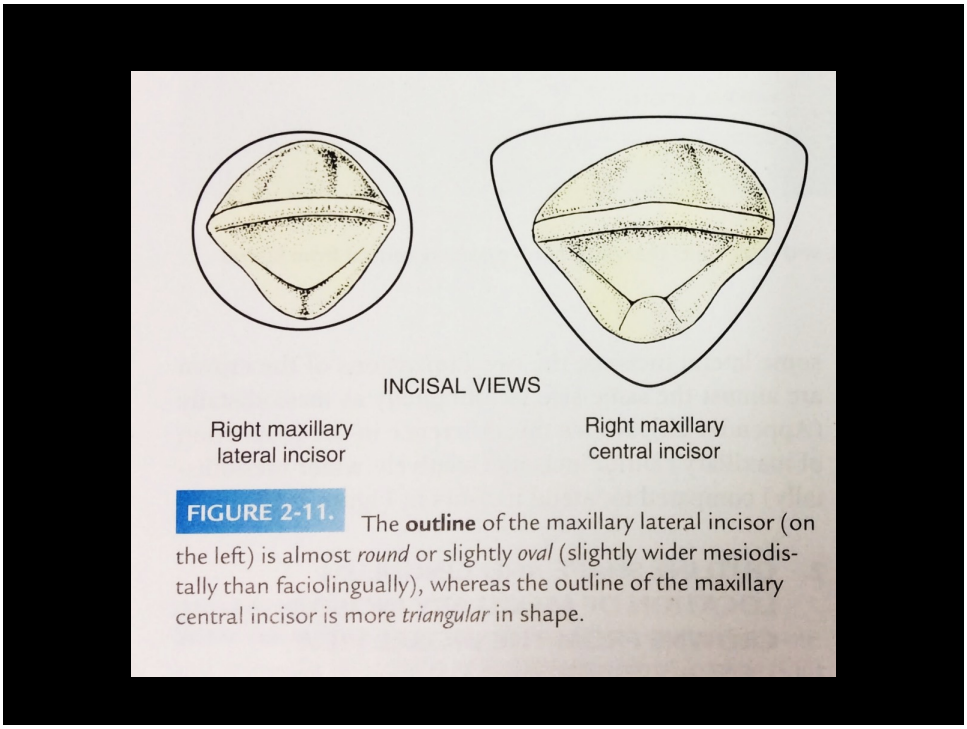
66

Incisal surface

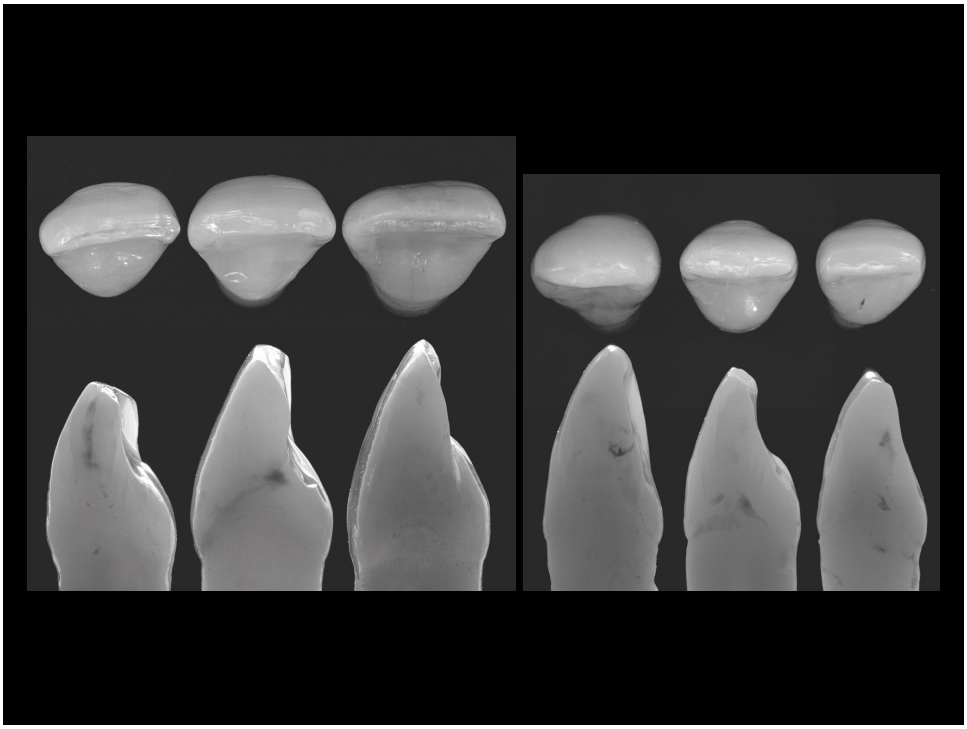
- *Smaller & narrower than central incisor*
- *La & Li contour exhibit more convexity*
- *Round to ovoid shaped*
- *La contour : M curve > D curve*



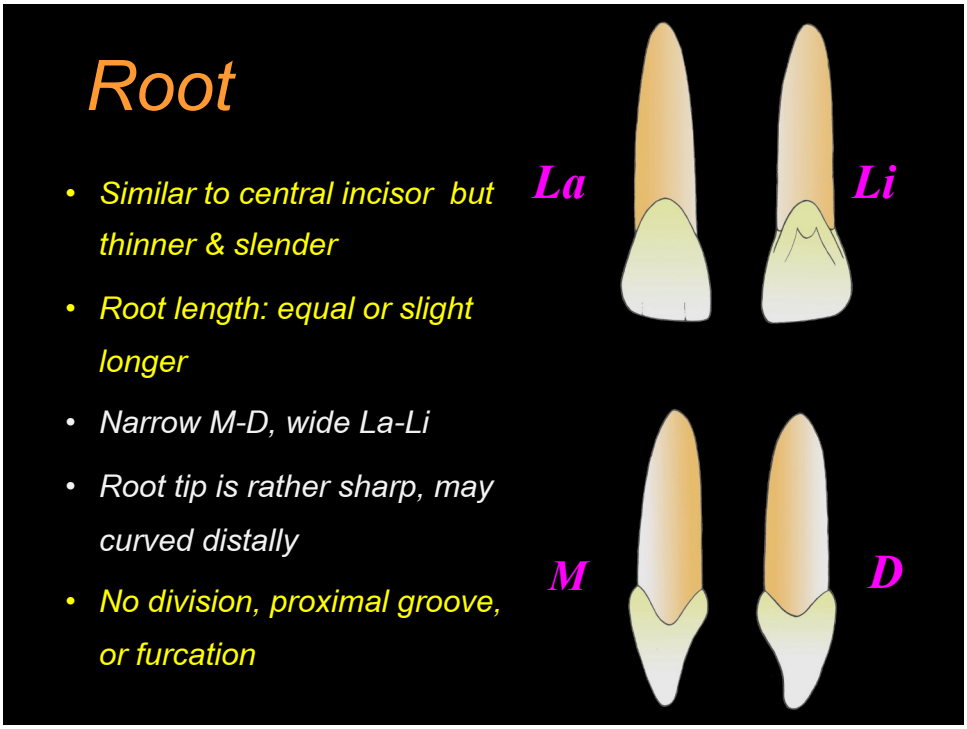
67


INCISAL VIEWS
Right maxillary lateral incisor
Right maxillary central incisor
FIGURE 2-11. The outline of the maxillary lateral incisor (on the left) is almost round or slightly oval (slightly wider mesiodistally than faciolingually), whereas the outline of the maxillary central incisor is more triangular in shape.

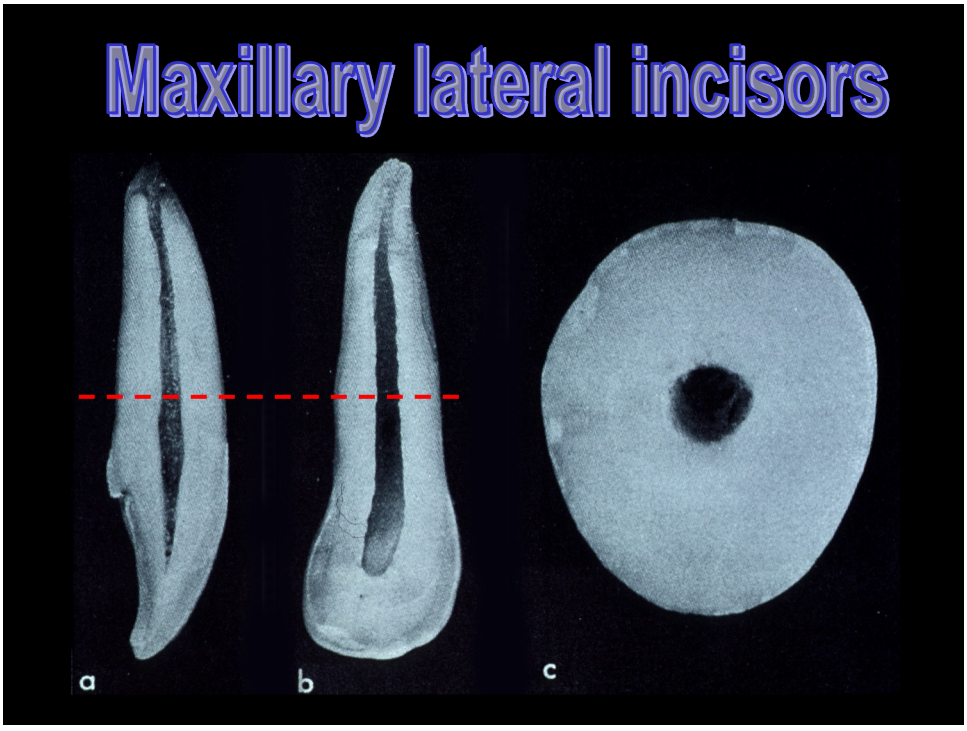
68



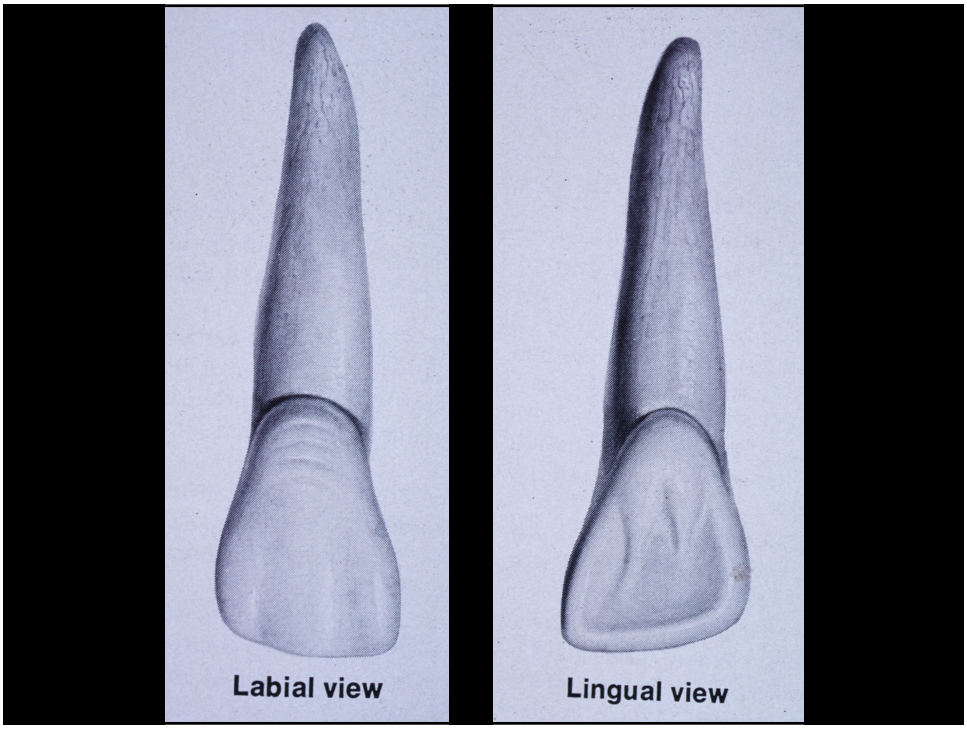
69


Root
Similar to central incisor but thinner & slender
Root length: equal or slight longer
Narrow M-D, wide La-Li
Root tip is rather sharp, may curved distally
No division, proximal groove, or furcation
La
Li
M
D

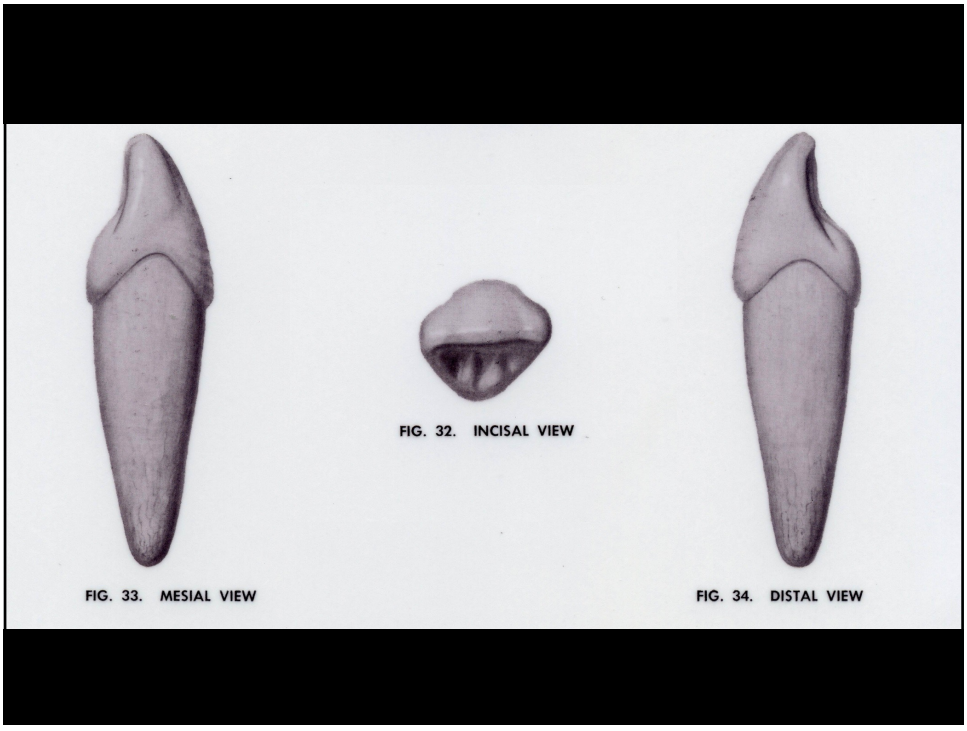
70


Maxillary lateral incisors
a
b
c

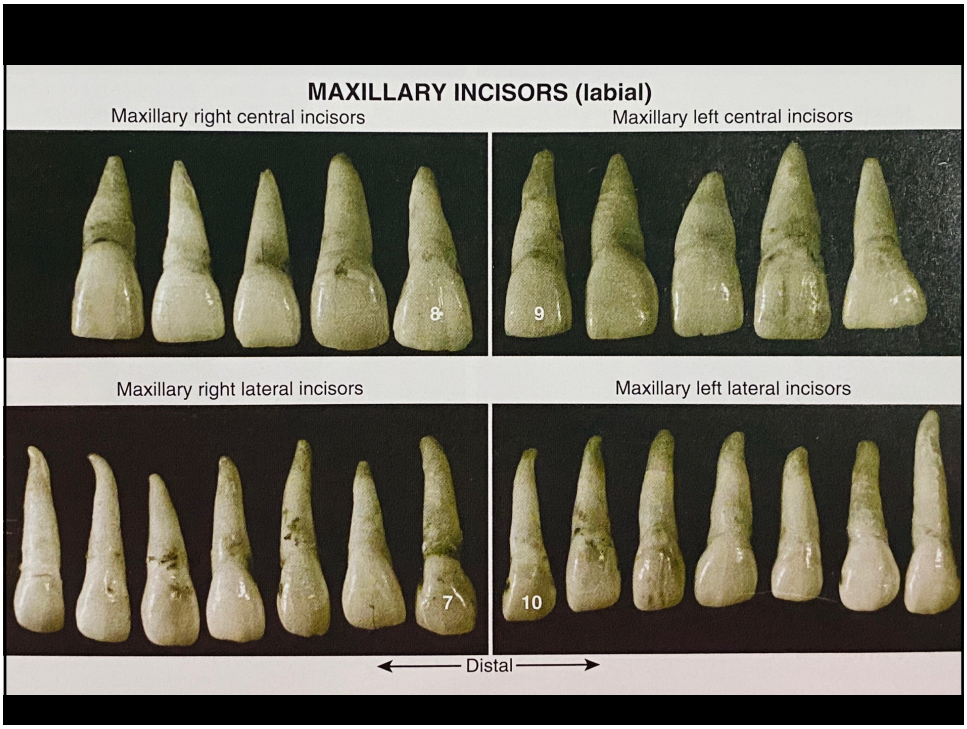
72


Labial view
Lingual view

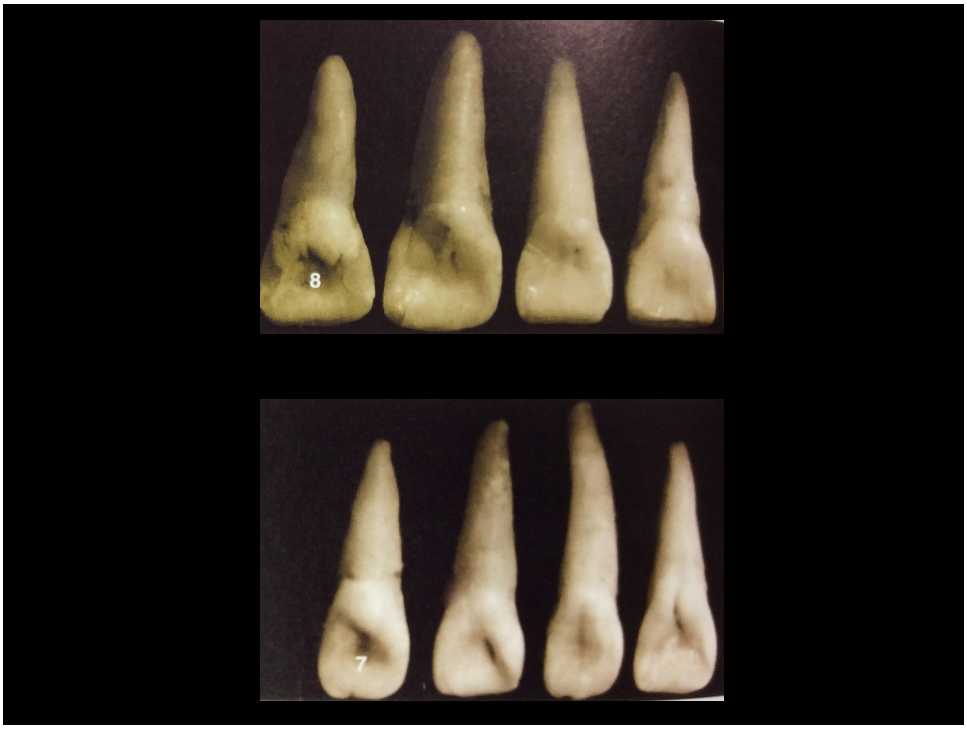
73


FIG. 32. INCISAL VIEW
FIG. 33. MESIAL VIEW
FIG. 34. DISTAL VIEW

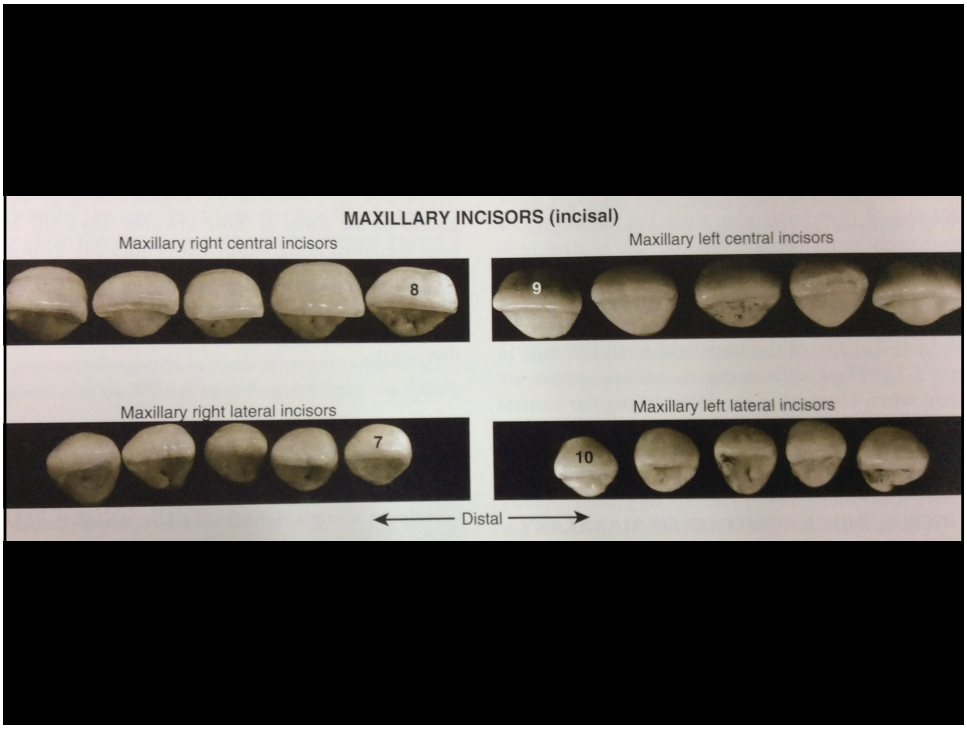
74


MAXILLARY INCISORS (labial)
Maxillary right central incisors
Maxillary left central incisors
8
9
Maxillary right lateral incisors
Maxillary left lateral incisors
7
10
Distal

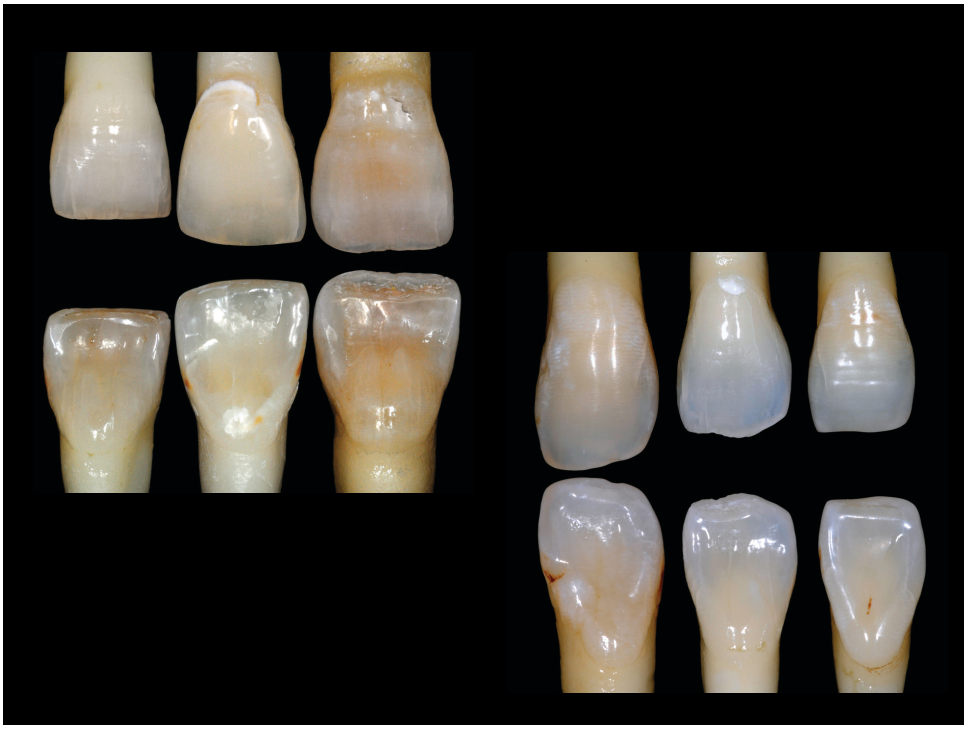
75


8
7

76

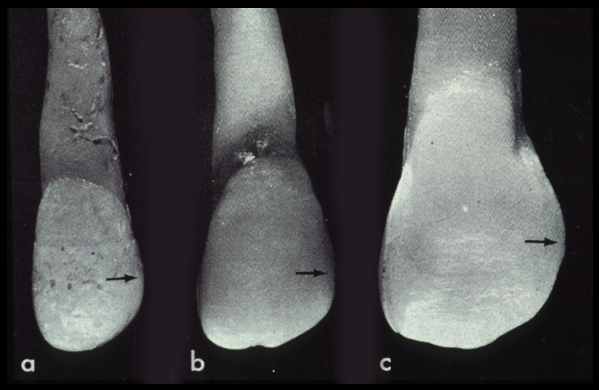

MAXILLARY INCISORS (incisal)
Maxillary right central incisors
Maxillary left central incisors
8
9
Maxillary right lateral incisors
Maxillary left lateral incisors
7
10
Distal

78



79

Lateral incisor variation:





80

Lateral incisor variation:





Palato-radicular groove

Tubercle: fissure/cleft

81

Dental Anomalies

- Hutchinson's incisors in congenital syphilis





82

Labial:

TRAITS TO DISTINGUISH MAXILLARY CENTRAL FROM LATERAL INCISOR: LABIAL VIEW

CENTRAL INCISOR	LATERAL INCISOR
Larger crown, wider cervically	Smaller crown, narrower cervically
Mesial incisal angle is a right angle	Mesial incisal angle is rounder
Distal contact closer to incisal ridge	Distal contact is near middle third
Less likely root tip bend to distal	Root tip often bends to distal
Incisal edge closer to horizontal	Incisal edge slopes cervically to distal

TRAITS TO DIFFERENT MAXILLARY RIGHT FROM LEFT INCISOR: LABIAL VIEW

CENTRAL INCISOR AND LATERAL INCISOR
Mesial crown outline flatter, distal more rounded
Distoincisal angle more rounded than mesioincisal angle
Distal contact more cervical than mesial contact
Incisal edge slopes shorter toward the distal

84

Lingual:

TRAITS TO DISTINGUISH MAXILLARY CENTRAL FROM LATERAL INCISOR: LINGUAL VIEW

CENTRAL INCISOR	LATERAL INCISOR
Larger shallow lingual fossa	Deep but small fossa
Cingulum distally positioned	Cingulum centered
Less frequent lingual pit	More common lingual pit

Plus outline characteristics seen from facial apply to lingual outline

TRAITS TO DIFFERENTIATE MAXILLARY RIGHT FROM LEFT INCISOR: LINGUAL VIEW

CENTRAL INCISOR	LATERAL INCISOR
Cingulum toward distal	Longer and straighter mesial marginal ridge
Distal marginal ridge more curved than mesial	
Both have longer mesiolingual marginal ridge	

Plus outline characteristics from facial also apply to lingual outline

85

Proximal:

TO DISTINGUISH MAXILLARY CENTRAL FROM LATERAL INCISOR: PROXIMAL VIEWS

CENTRAL INCISOR	LATERAL INCISOR
Deeper lingual crown concavity	Slightly shallower lingual crown concavity
Root outline more curved on lingual than facial	More even root taper facially and lingually

TO DIFFERENTIATE MAXILLARY RIGHT FROM LEFT INCISOR: COMPARING PROXIMAL VIEWS

CENTRAL INCISOR AND LATERAL INCISOR
Larger cervical line curvature on mesial than distal
Flatter mesial root surface contour than distal contour

86

Incisal:

TO DISTINGUISH MAXILLARY CENTRAL FROM LATERAL INCISOR: INCISAL VIEW

CENTRAL INCISOR	LATERAL INCISOR
Crown noticeably wider mesiodistally than faciolingually	Crown minimally wider mesiodistally than faciolingually
Crown outline roughly triangular	Crown outline more round or oval
Cingulum off center to distal	Cingulum centered
Incisal edge curves mesiodistally	Incisal edge straighter mesiodistally

TO DIFFERENTIATE MAXILLARY RIGHT FROM LEFT INCISOR: INCISAL VIEW

CENTRAL INCISOR	LATERAL INCISOR
Cingulum more distal	Best to use other views

87



88